

Service Manual

Dolby NR-Equipped
Stereo Double Cassette Deck

Cassette Deck
RS-X302



Color

(K)...Black Type

Area

Country Code	Area	Color
(E)	Continental Europe.	(K)
(EB)	Great Britain.	
(EG)	F.R. Germany and Italy.	
(GC)	Asia, Latin America, Middle Near East and Africa.	
(GN)	Oceania.	



MECHANISM SERIES (AR300)

SPECIFICATIONS

■ CASSETTE DECK SECTION

Deck system	Stereo cassette deck
Track system	4-track, 2-channel
Heads	
(tape deck 2) rec/play	Permalloy head
erasing	Double-gap ferrite head
(tape deck 1) play	Permalloy head
Motors	
(tape deck 2) Capstan/reel table drive	DC servo motor
(tape deck 1) Capstan/reel table drive	DC servo motor
Recording system	AC bias
Bias frequency	80 kHz
Erasing system	AC erase
Tape speeds	4.8 cm/sec. (1-7/8 ips)
Frequency response (w/o Dolby NR)	
NORMAL	30 Hz~16 kHz
	40 Hz~15 kHz (DIN)
CrO ₂	30 Hz~16 kHz
	40 Hz~15 kHz (DIN)
METAL	30 Hz~18 kHz
	40 Hz~17 kHz (DIN)
S/N (signal level = max recording level, CrO ₂ type tape)	
Dolby C NR ON	74 dB (CCIR)
Dolby B NR ON	66 dB (CCIR)
Dolby NR OFF	56 dB (A weighted)

Wow and flutter 0.1 % (WRMS)

Fast forward and rewind times

Approx. 110 seconds with C-60 cassette tape

Input sensitivity and impedance

LINE 60 mV/47 kΩ

Output voltage and impedance

LINE 400 mV/800 Ω

■ GENERAL

Power consumption 15 W

Dimensions (W × H × D)

360 × 129 × 285 mm
(14-3/16" × 5-3/32" × 11-7/32")

Weight 3.7 kg (8.1 lb.)

Note:

Specifications are subject to change without notice.
Weight and dimensions are approximate.

* Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"Dolby" and the double-D symbol are trade marks of Dolby Laboratories Licensing Corporation.

Technics

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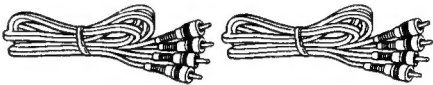
ACCESSORIES



3-core flat cable
(REX0346) 1 pc.

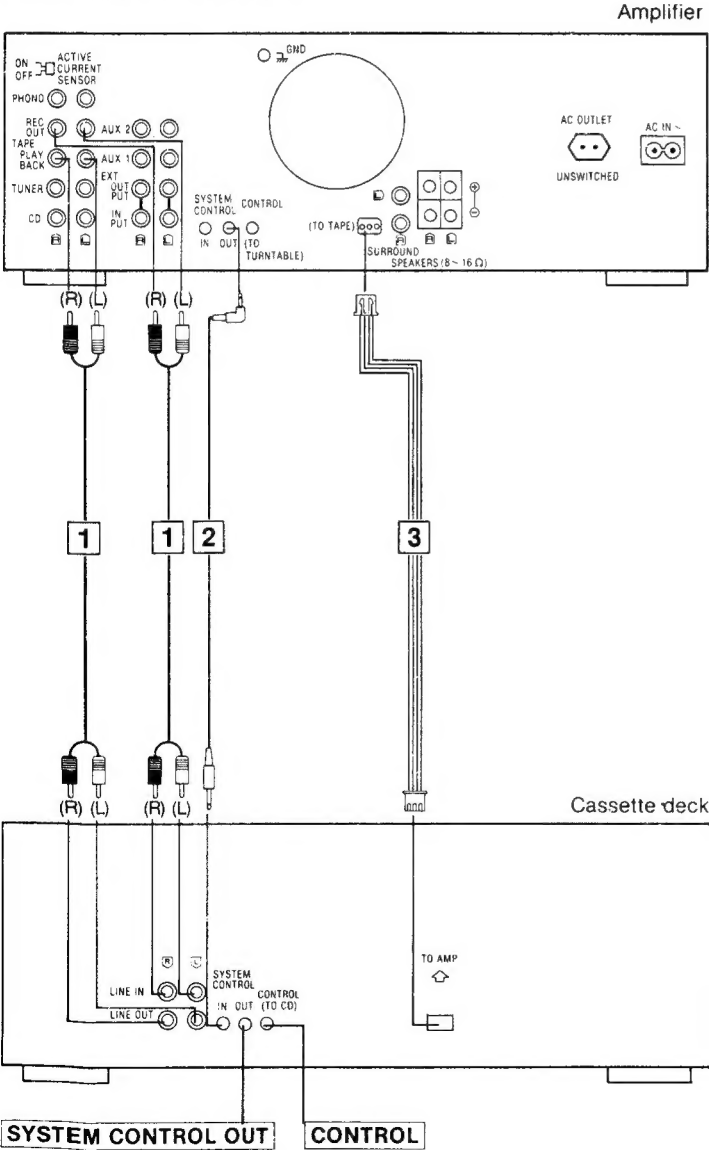


L-type cable
(SJP2257T) 1 pc.



Stereo connection cables
(SJP2249-3) 2 pcs.

CONNECTIONS



Make connections in the numbered sequence by using the included cables.

Stereo connection cable

White (L) Red (R)

- 1 Connect the stereo connection cables.
- 2 Connect the L-type cable.
- 3 Connect the flat cable.

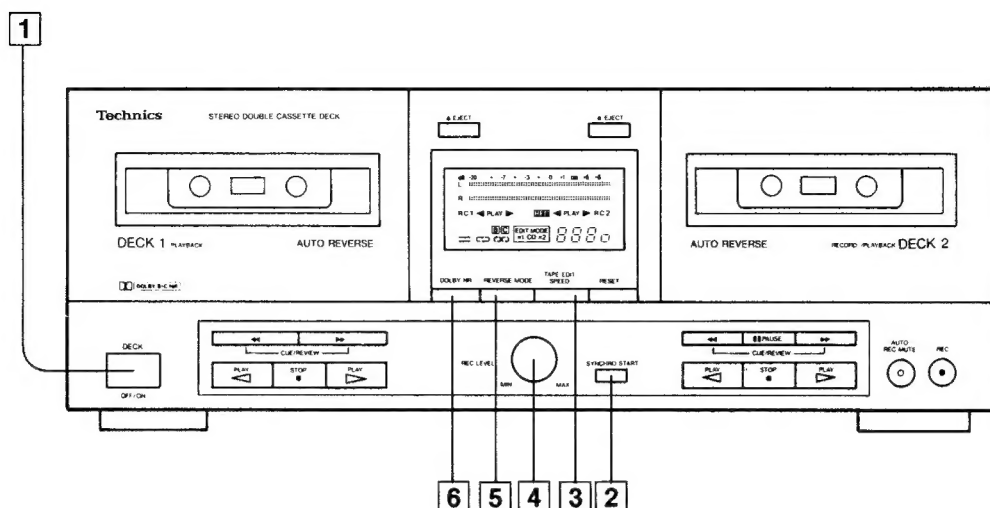
SYSTEM CONTROL OUT

This terminal is used to connect a Technics compact disc player or a Technics stereo graphic equalizer with the "SYSTEM CONTROL IN" terminal.

CONTROL

This terminal is used to connect a Technics multi compact disc player with the "CONTROL" terminal.

LOCATION OF CONTROLS



Controls common to both tape decks

1 DECK ON/OFF switch (DECK)

2 Synchro-start button (SYNCHRO START)

This button can be used to start a tape-to-tape recording, simultaneously starting tape deck 1 (the playback deck) and tape deck 2 (the recording deck).

3 Tape-to-tape recording tape-speed selector (TAPE EDIT SPEED)

This selector can be used to select the recording speed when a tape-to-tape recording is made.

4 Recording-level control (REC LEVEL)

This control can be used to regulate the recording level of tape deck 2.

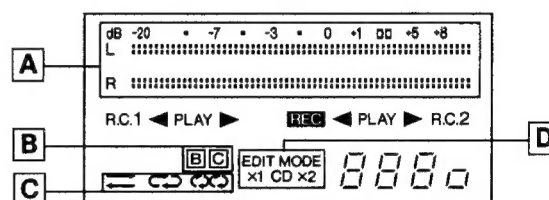
5 Reverse-mode selector (REVERSE MODE)

This selector can be used for selection of the reverse mode (for either playback or recording).

6 Dolby noise-reduction selector (DOLBY NR)

This selector can be used to reduce the hiss noise that is characteristic of tapes. This unit is provided with both the B-type and C-type noise-reduction systems.

Indicators common to both tape decks



A Input level meter

During playback, this meter indicates the level of the recorded sound source. During recording, it indicates the level being recorded, adjusted by the recording-level control.

B Dolby noise-reduction indicators (B, C)

One of these indicators illuminates to show the type of Dolby noise-reduction system selected by pressing the Dolby noise-reduction selector.

C Reverse-mode indicators (B, C, infinity)

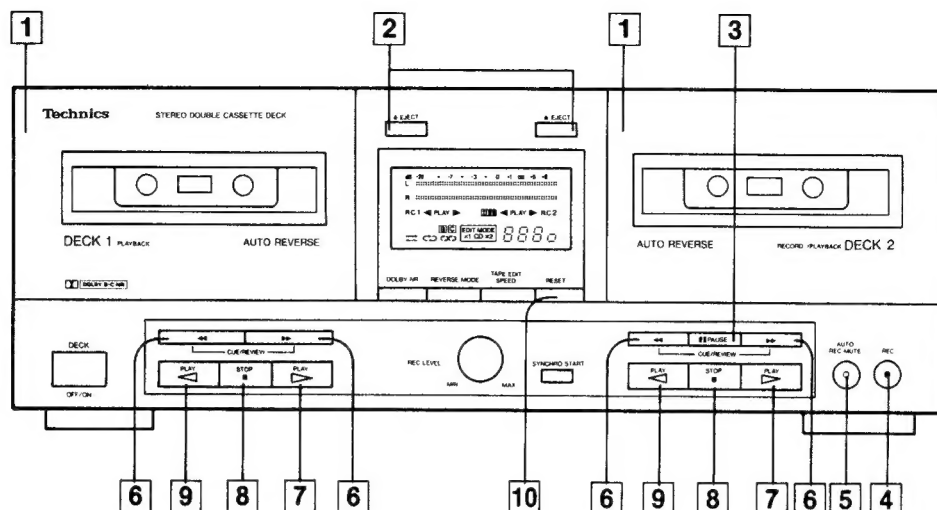
One of these indicators illuminates to show which of the reverse modes was selected by the reverse-mode selector.

D Edit-recording indicators (EDIT MODE, CD, x1, x2)

The words "EDIT MODE" and "x1 (or x2)" indicator will illuminate when a tape-to-tape recording is made. The words "EDIT MODE" and "CD" indicator will illuminate when a CD edit-recording is made.

Tape deck 1

Tape deck 2



Controls applicable to tape deck 1 and/or 2

Indicators applicable only to deck 1 or 2

1 **Cassette holder**2 **Eject button (▲ EJECT)**

This button can be used to open the cassette holder.

3 **Pause button (II PAUSE)**

This button can be used to temporarily stop the tape playback or recording, on tape deck 2 only.

4 **Record button (REC)**

This button can be used to change tape deck 2 to the recording stand-by mode.

5 **Automatic-record-muting button (AUTO REC MUTE)**

This button can be used to make a silent interval on the tape during recording, on tape deck 2 only.

6 **Fast-forward/cue, rewind/review buttons (◀▶▶▶)**

These buttons are used to advance or rewind the tape. During playback, these buttons are used to cue or review while listening to the contents at high speed.

7 **Forward-side playback button (▶ PLAY)**

This button can be used to start the playback or recording of side "A" of the cassette in tape deck 2 only. (The tape will then begin moving in the left-to-right direction.)

8 **Stop button (■ STOP)**

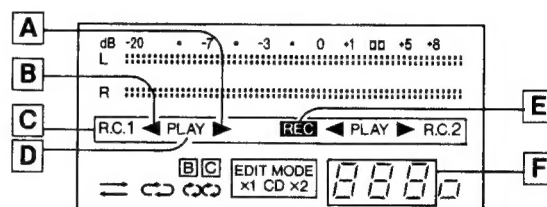
This button can be used to stop tape movement.

9 **Reverse-side playback button (◀ PLAY)**

This button can be used to start the playback or recording of side "B" of the cassette in tape deck 2 only. (The tape will then begin moving in the right-to-left direction.)

10 **Tape counter reset button (RESET)**

This button can be used to reset the tape counter indication (for tape deck 2 only) to "000".

A **Forward-side indicator (▶)**

This indicator illuminates during playback or recording on tape deck 2 to indicate that side "A" of the tape is being used.

B **Reverse-side indicator (◀)**

This indicator illuminates during playback or recording on tape deck 2 to indicate that side "B" of the tape is being used.

C **Remote-control indicator (R.C.1/R.C.2)**

This indicator illuminates to indicate that this tape deck can now be controlled by the remote-control transmitter (included with tuner).

D **Playback indicator (PLAY)**

When this indicator illuminates steadily, it indicates that this tape deck is in the playback mode or the recording mode (for tape deck 2 only).

When it flashes continually, this is an indication that tape deck 2 is in the pause mode or the recording stand-by mode.

E **Recording indicator (REC)**

This indicator illuminates to indicate that tape deck 2 is in the recording stand-by mode or is recording.

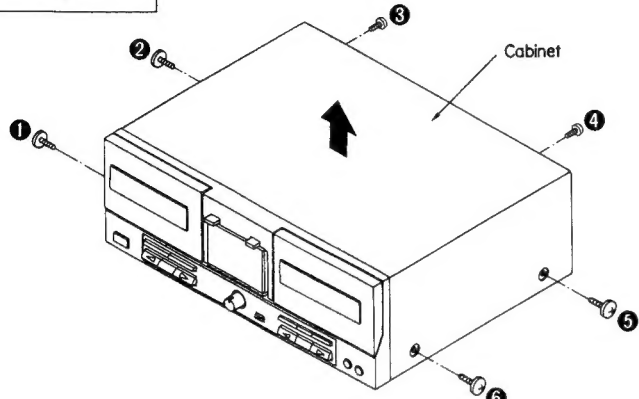
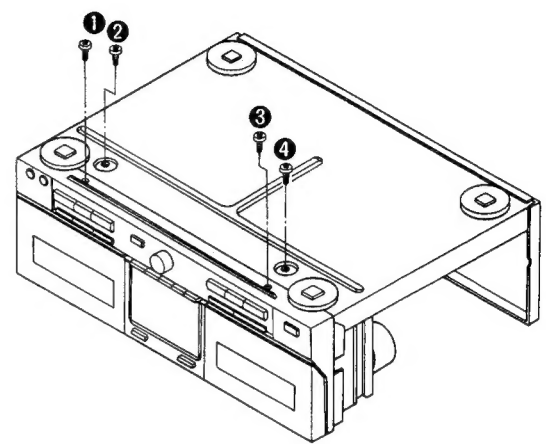
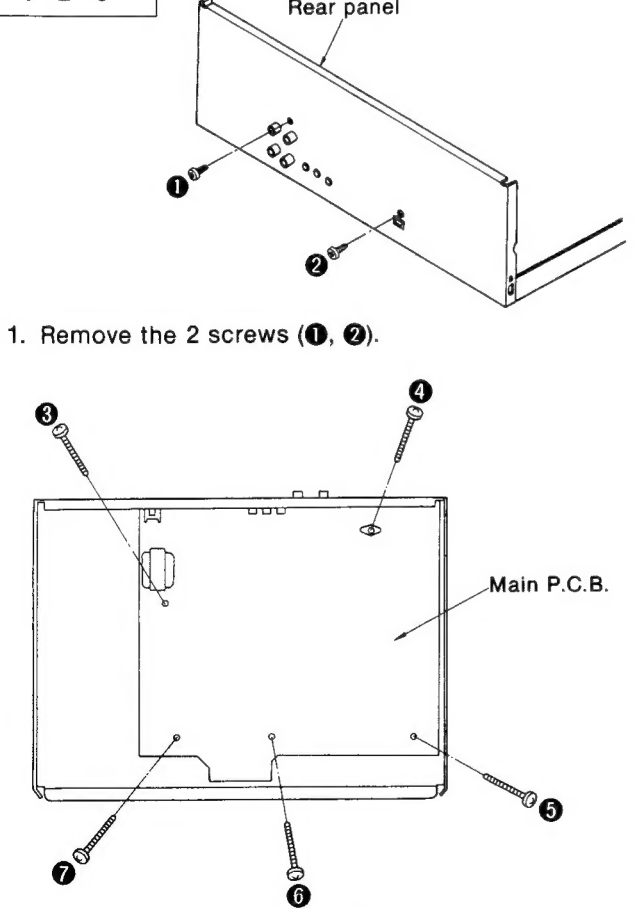
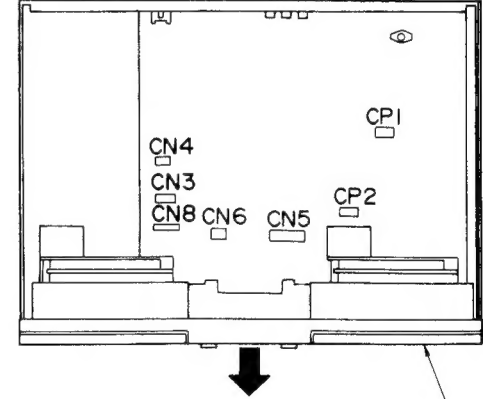
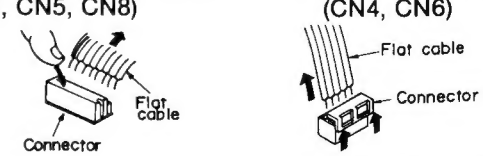
F **Tape deck 2 counter**

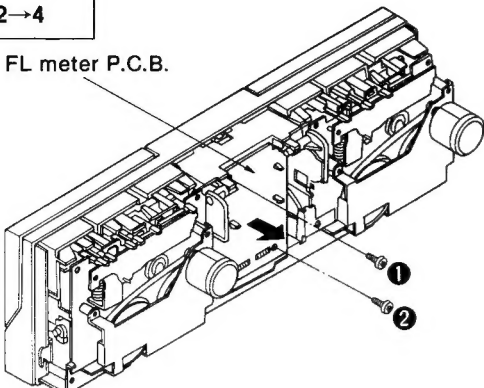
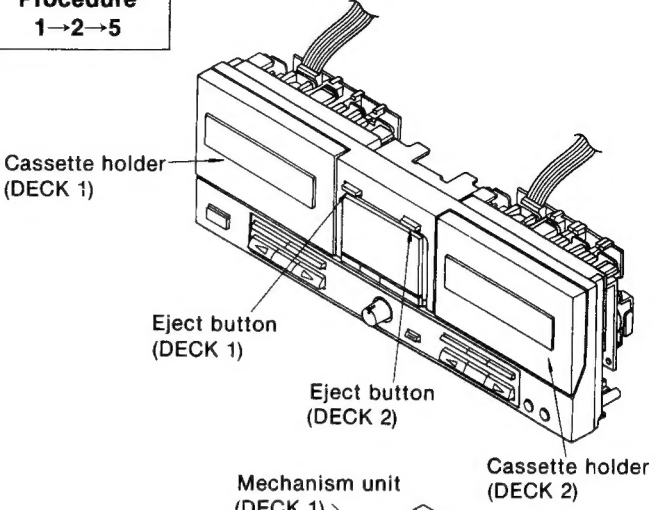
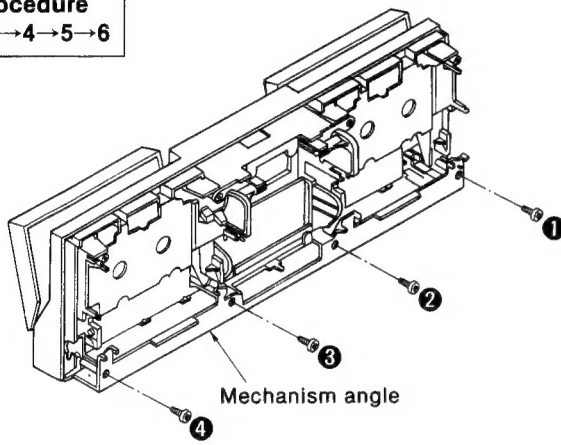
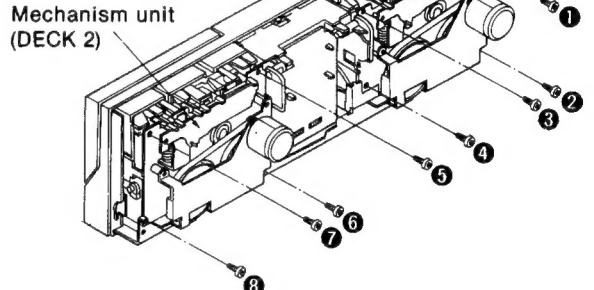
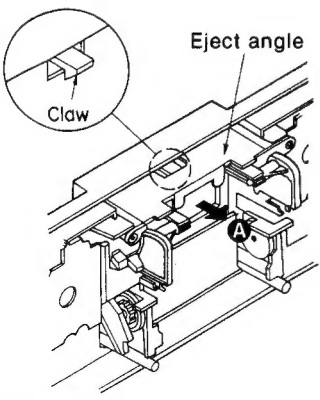
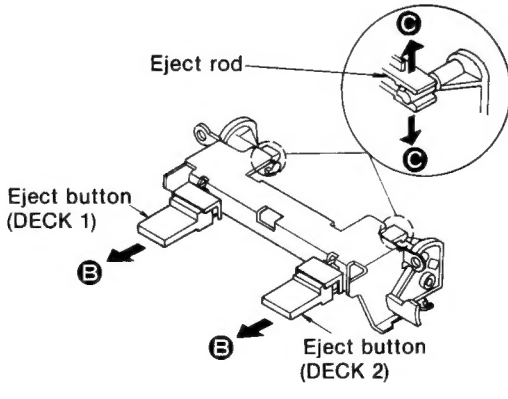
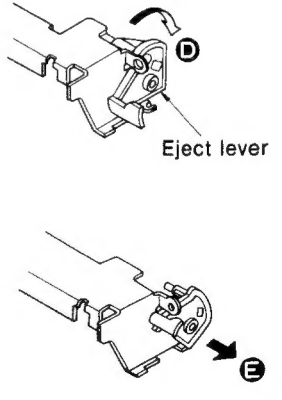
Indicates the amount of tape movement.

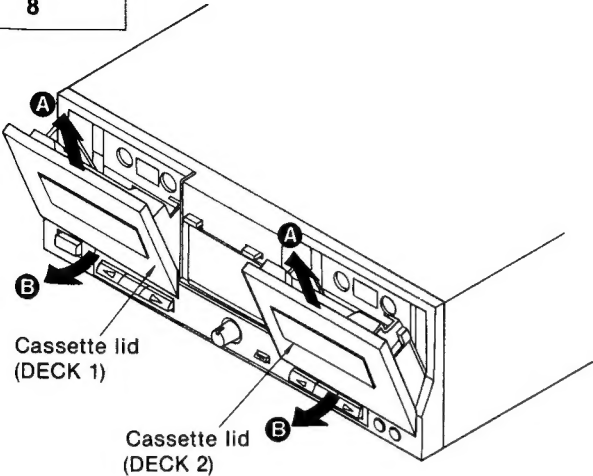
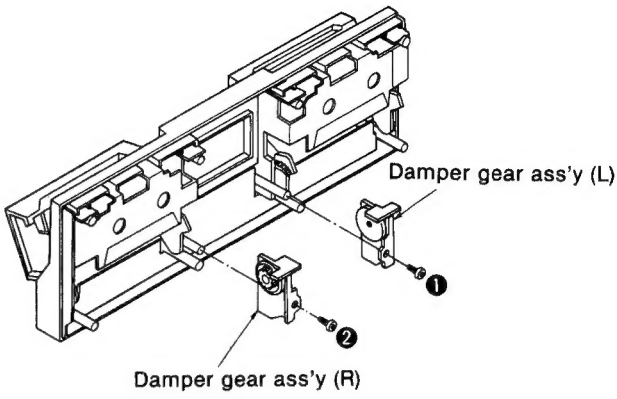
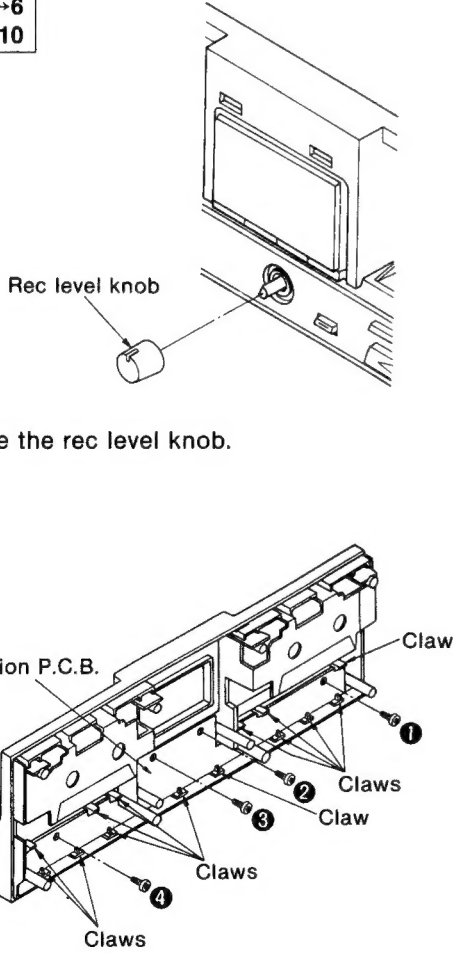
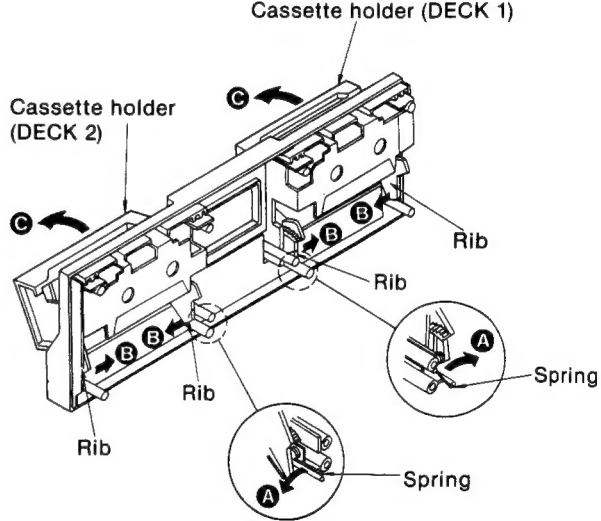
DISASSEMBLY INSTRUCTIONS

"ATTENTION SERVICER"

Some chassis components may have sharp edges. Be careful when disassembling and servicing.

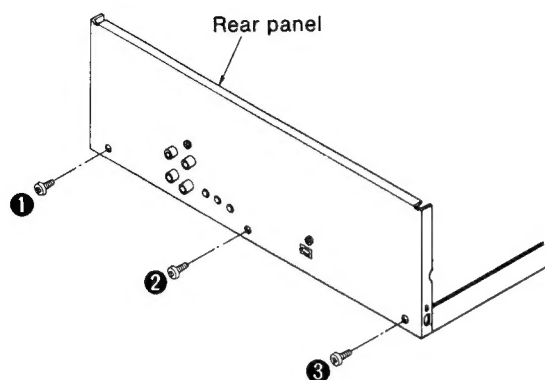
Ref. No. 1	Removal of the cabinet	Ref. No. 2	Removal of the front panel ass'y
Procedure 1	 <p>• Remove the 6 screws (①~⑥).</p>	Procedure 1→2	 <p>1. Remove the 4 screws (①~④).</p>
Ref. No. 3	Removal of the main P.C.B.		
Procedure 1→2→3	 <p>1. Remove the 2 screws (①, ②).</p> <p>2. Remove the 5 screws (③~⑦).</p>		 <p>2. Remove the 2 connectors (CP1, CP2).</p> <p>3. Remove the 5 flat cables (CN3, CN4, CN5, CN6, CN8).</p> <p>4. Remove the front panel ass'y in the direction of arrow.</p> <p>How to remove the flat cable</p> <p>• Pull out the flat cable while pressing the connector. (CN3, CN5, CN8)</p> <p>1. Lift the connector.</p> <p>2. Pull out the flat cable. (CN4, CN6)</p> 

Ref. No. 4	Removal of the FL meter P.C.B.	Ref. No. 5	Removal of the mechanism units (DECK 1, DECK 2)
Procedure 1→2→4		Procedure 1→2→5	
	 <p>FL meter P.C.B.</p> <ol style="list-style-type: none"> 1. Remove the 2 screws (①, ②). 2. Remove the FL meter P.C.B. in the direction of arrow. 	 <p>Cassette holder (DECK 1)</p> <p>Eject button (DECK 1)</p> <p>Eject button (DECK 2)</p> <p>Mechanism unit (DECK 1)</p> <p>Cassette holder (DECK 2)</p>	
Ref. No. 6	Removal of the mechanism angle		
Procedure 1→2→4→5→6			
	 <p>Mechanism angle</p> <p>• Remove the 4 screws (①~④).</p>	 <p>Mechanism unit (DECK 2)</p> <p>① ② ③ ④ ⑤ ⑥ ⑦ ⑧</p> <p>■ Removal of the mechanism unit (DECK 1)</p> <ol style="list-style-type: none"> 1. Press the eject button and open the cassette holder. 2. Remove the 4 screws (①~④). <p>■ Removal of the mechanism unit (DECK 2)</p> <ol style="list-style-type: none"> 1. Press the eject button and open the cassette holder. 2. Remove the 4 screws (⑤~⑧). 	
Ref. No. 7	Removal of the eject angle, eject buttons, and eject lever		
Procedure 1→2→4→5→7			
 <p>Eject angle</p> <p>Claw</p> <ol style="list-style-type: none"> 1. Release the 1 claw. 2. Pull out the eject angle in the direction of arrow ①. 	 <p>Eject rod</p> <p>Eject button (DECK 1)</p> <p>Eject button (DECK 2)</p> <ol style="list-style-type: none"> 3. Pull out the claw of the eject rod in the direction of arrow ③, remove the eject buttons and the eject rod in the direction of arrow ②. 	 <p>Eject lever</p> <ol style="list-style-type: none"> 4. Turn the eject lever in the direction of arrow ④, and remove the eject lever in the direction of arrow ⑤. 	

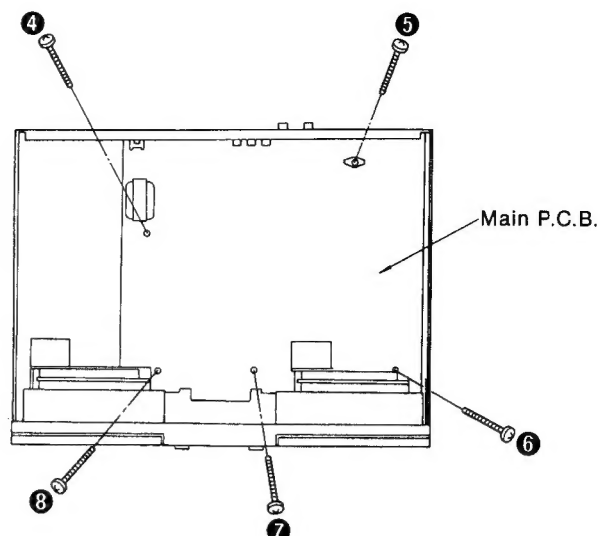
Ref. No. 8	Removal of the cassette lid (DECK 1, DECK 2)	Ref. No. 9	Removal of the cassette holder (DECK 1, DECK 2)
Procedure 8	 <p>Cassette lid (DECK 1)</p> <p>Cassette lid (DECK 2)</p> <ul style="list-style-type: none"> Lift the cassette lid in the direction of arrow A and remove it in the direction of arrow B. 	Procedure 1→2→4→5 →6→7→8→9	 <p>Damper gear ass'y (L)</p> <p>Damper gear ass'y (R)</p> <ol style="list-style-type: none"> Remove the 2 screws (1, 2). Remove the damper gear ass'y (L) and damper gear ass'y (R).
Ref. No. 10	Removal of the operation P.C.B.		
Procedure 1→2→4→5→6 →7→8→9→10	 <p>Rec level knob</p> <p>Operation P.C.B.</p> <p>Claw</p> <p>Claws</p> <ol style="list-style-type: none"> Remove the rec level knob. Remove the 4 screws (1~4). Release the 14 claws. 		 <p>Cassette holder (DECK 1)</p> <p>Cassette holder (DECK 2)</p> <p>Rib</p> <p>Rib</p> <p>Rib</p> <p>Rib</p> <p>Spring</p> <p>Spring</p> <ol style="list-style-type: none"> Remove the springs in the direction of arrow A. Remove the ribs in the direction of arrow B. Remove the cassette holder in the direction of arrow C.

Ref. No.
11

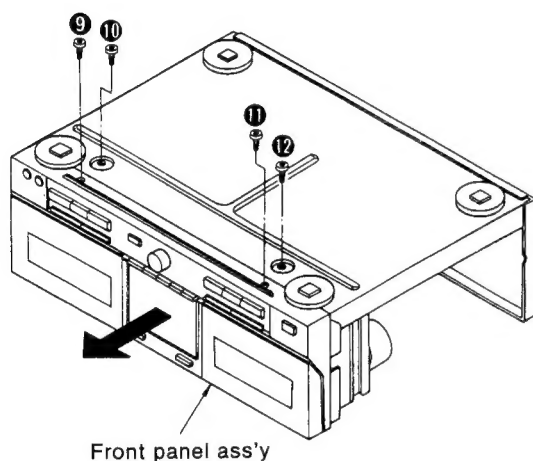
How to check the main P.C.B.

Procedure
1→11

1. Remove the 3 screws (1~3).

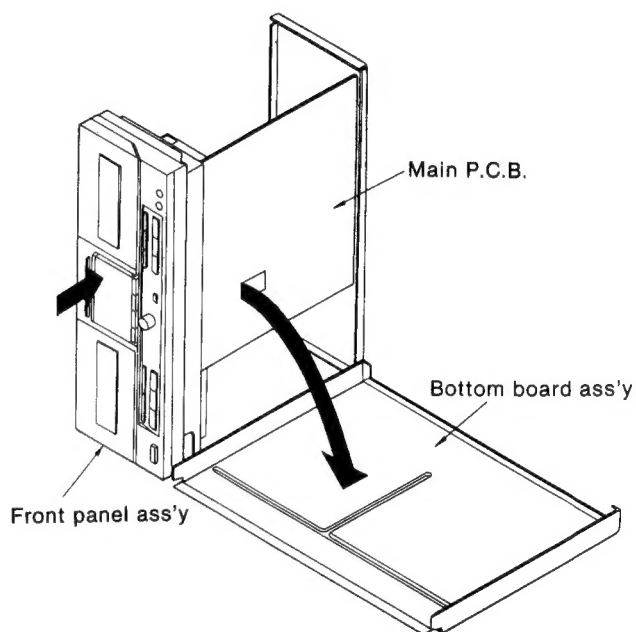


2. Remove the 5 screws (4~8).



3. Remove the 4 screws (9~12).

4. Remove the front panel ass'y in the direction of arrow.

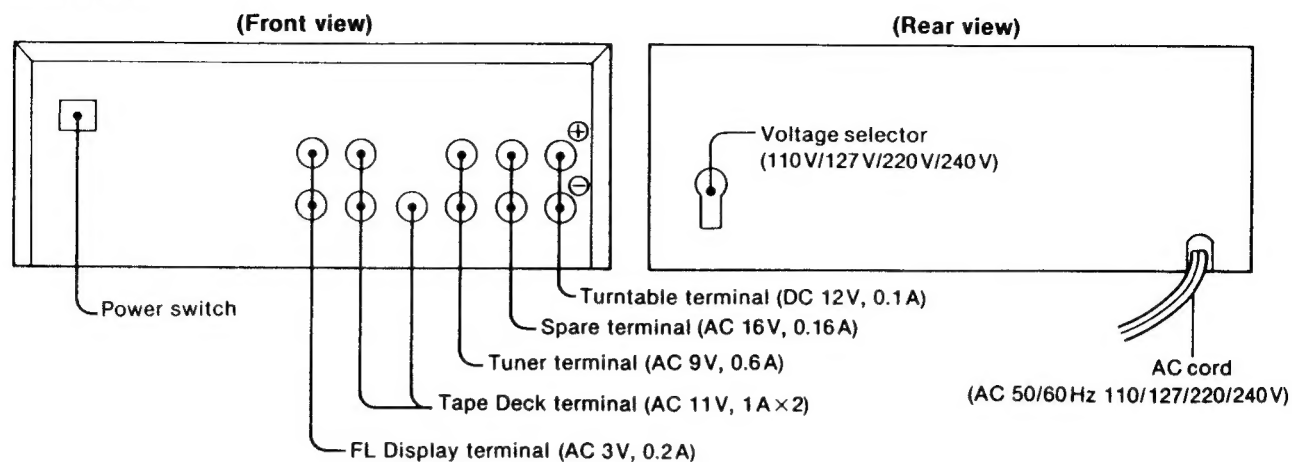


5. Remove the bottom board ass'y.

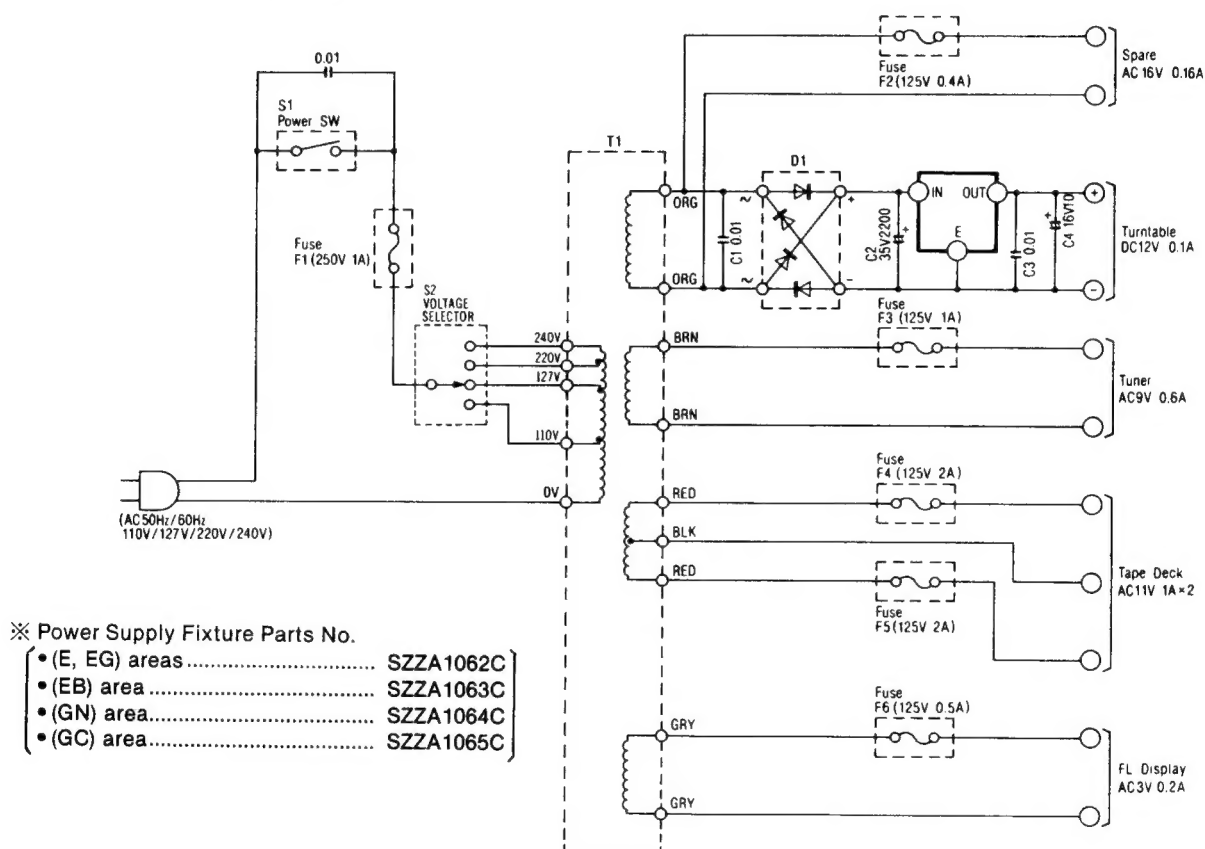
6. Reinstall the front panel ass'y to the main P.C.B.

■ INFORMATION ON POWER SUPPLY FIXTURE

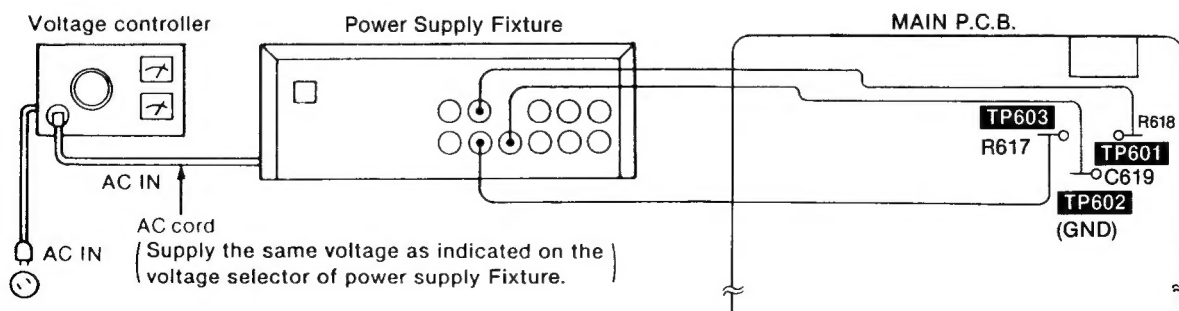
• LOCATION



• SCHEMATIC DIAGRAM (Reference)



• HOW TO CONNECT



MEASUREMENTS AND ADJUSTMENTS

Measurement Condition

- Rec. level control; Maximum
- Reverse-mode selector switch; \longleftrightarrow
- Tape-to-tape-recording tape-speed selector; X1

- Dolby NR selector switch; Off
- Make sure heads are clean
- Make sure capstan and pressure roller are clean
- Judgeable room temperature $20 \pm 5^\circ\text{C}$ ($68 \pm 9^\circ\text{F}$)

Measuring instrument

- EVM (Electronic Voltmeter)
- Oscilloscope
- Digital frequency counter
- AF oscillator

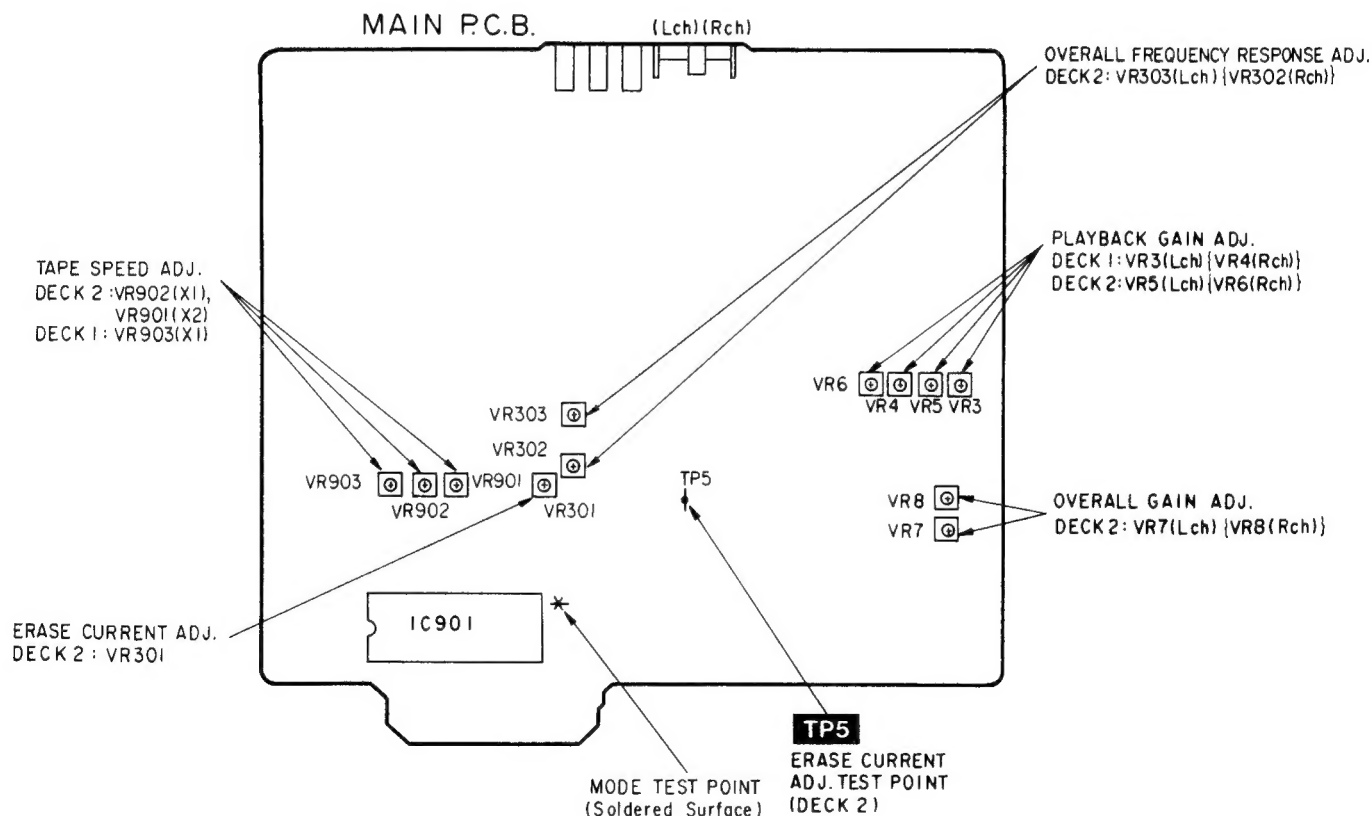
- ATT (Attenuator)
- DC voltmeter
- Resistor (600Ω)

Test tape

- Head azimuth adjustment (8kHz, -20dB); QZZCFM
- Tape speed adjustment (3kHz, -10dB); QZZCWAT
- Playback frequency response (315Hz, 12.5kHz, 10kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz, 63Hz, -20dB); QZZCFM

- Playback gain adjustment (315Hz, 0dB); QZZCFM
- Overall frequency response, Overall gain adjustment
Normal reference blank tape; QZZCRA
CrO₂ reference blank tape; QZZCRX
Metal reference blank tape; QZZCRZ

Adjustment Points



HEAD AZIMUTH ADJUSTMENT (DECK 1/2)

1. Playback the azimuth adjustment portion (8kHz, -20dB) of the test tape (QZZCFM). Vary the azimuth adjusting screw until the outputs of the L-CH and R-CH are maximized and the lissajous waveform, as illustrated, approaches 0 degrees.

Note: If L-CH and R-CH are not maximized at the same point, adjust to the point where the levels of each channel are maximized and equal.

2. Perform the same adjustment in the play mode.
3. After the adjustment, apply screwlock to the azimuth adjusting screw.

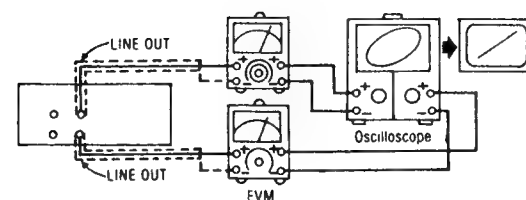


Fig. 1

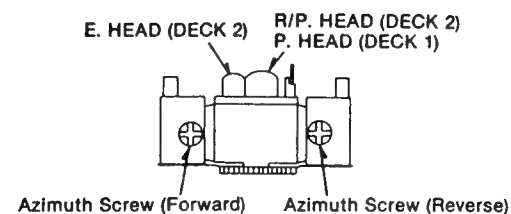


Fig. 2

TAPE SPEED ADJUSTMENT (DECK 1/2)**Normal speed**

1. Shift the Tape-to-tape recording tape-speed selector to "X1" and press the synchro-start button.
2. Playback the middle portion of the test tape (QZZCWAT).
3. Adjust Deck 1 = VR903 and Deck 2 = VR902 so that the output is within the standard value.

High speed

4. Shift the Tape-to-tape recording tape speed switch to "X2" and press the synchro-start button.
5. Playback the middle portion of the test tape (QZZCWAT).
6. Adjust Deck 2 = VR901 so that the output is within the standard value.

Note: The Normal speed adjustment must be done before the High speed adjustment.

(DECK 1) Standard value: 3000 ± 15 Hz [Normal (X1)], 6000 ± 600 Hz [High (X2), only confirmation]
(DECK 2) Standard value: 3000 ± 15 Hz [Normal (X1)], 6000 ± 30 Hz [High (X2)]

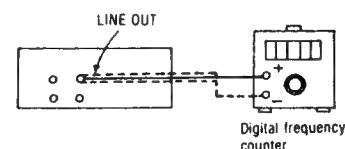


Fig. 3

PLAYBACK GAIN ADJUSTMENT (DECK 1/2)

1. Playback the gain adjusted portion (315Hz, 0dB) of the test tape (QZZCFM).
2. Adjust Deck 1 = VR3 (L-CH) [VR4 (R-CH)] and Deck 2 = VR5 (L-CH) [VR6 (R-CH)] so that the output is within the standard value.

Standard value: $0.4V \pm 0.5dB$

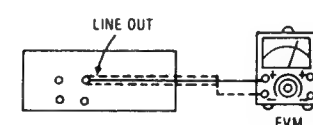


Fig. 4

PLAYBACK FREQUENCY RESPONSE (DECK 1/2)

1. Playback the frequency response portion (315Hz, 12.5kHz~63Hz, -20dB) of the test tape (QZZCFM).
2. Assume that the frequency response is within the range shown in Fig. 6 for both L-CH and R-CH.

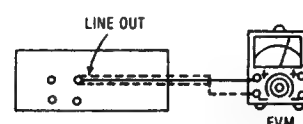


Fig. 5

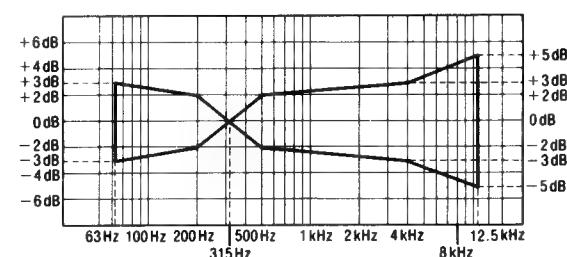


Fig. 6

ERASE CURRENT ADJUSTMENT (DECK 2)

1. Insert the Metal blank test tape (QZZCRZ) and set the unit to the Record Pause mode.
2. Adjust VR301 so that the output between TP3 and GND is within the standard value.

Standard value: 190 ± 5 mA (Metal)...EVM Reading: 190 ± 5 mV

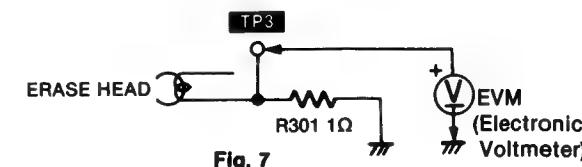


Fig. 7

OVERALL FREQUENCY RESPONSE (DECK 2)

1. Insert the Normal blank test tape (QZZCRA) and set the unit to the Record Pause mode.
2. Apply a reference input signal (1kHz, -24dB) through an attenuator.
3. Attenuate the signal by 20dB and adjust the frequency from 50Hz~10kHz.
4. Record the frequency sweep.
5. Playback the recorded signal and assure that it is within the range shown in Fig. 8 in comparison to the reference frequency (1kHz).
6. If it is not within the standard range, adjust VR303 (L-CH) and VR302 (R-CH) so that the frequency level is within the standard range.
 - Level up in high frequency rangeIncrease the bias current.
 - Level down in high frequency range ...Decrease the bias current.
7. Repeat steps 2~6 above using the CrO₂ tape (QZZCRX) and the Metal tape (QZZCRZ) increasing the frequency range to 12.5kHz (50Hz~12.5kHz).
8. Assure that the level is within the range shown in Fig. 9.

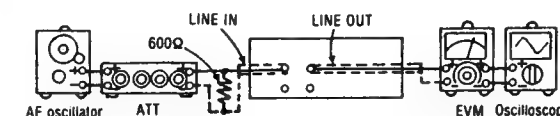


Fig. 10

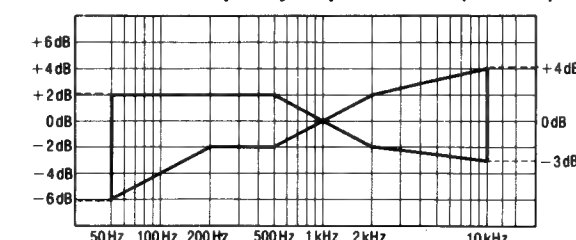
Normal Overall frequency response chart (NR OUT)

Fig. 8

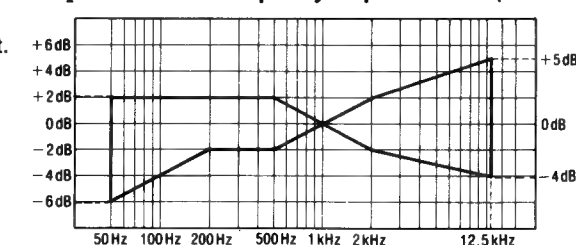
CrO₂ Metal Overall frequency response chart (NR OUT)

Fig. 9

OVERALL GAIN ADJUSTMENT (DECK 2)

1. Insert the Normal blank test tape (QZZCRA) and set the unit to the Record pause mode.
2. Apply a reference input signal (1kHz, -24dB). Attenuate the output so that its level becomes 0.4V.
3. Record this input signal.
4. Playback the signal recorded in step 3 above, and assure that the output is within the standard value.
5. If it is not within the standard value, adjust VR7 (L-CH) and VR8 (R-CH).
6. Repeat the step 2~5 above until the output is within the standard value.

Standard value: $0.4V \pm 0.5dB$

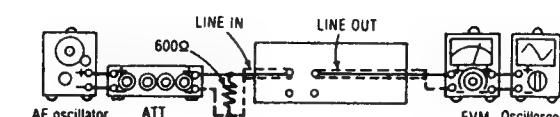
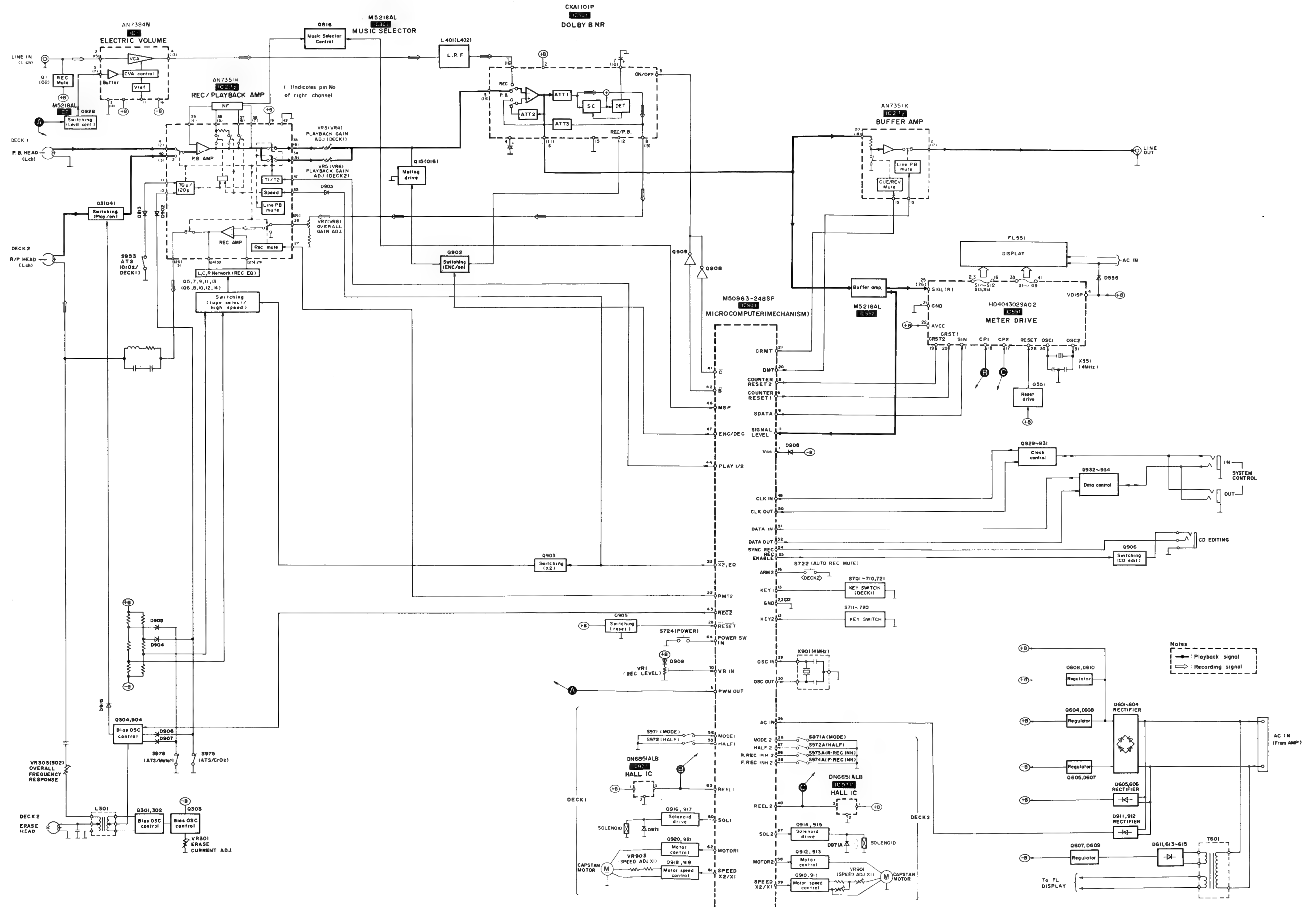


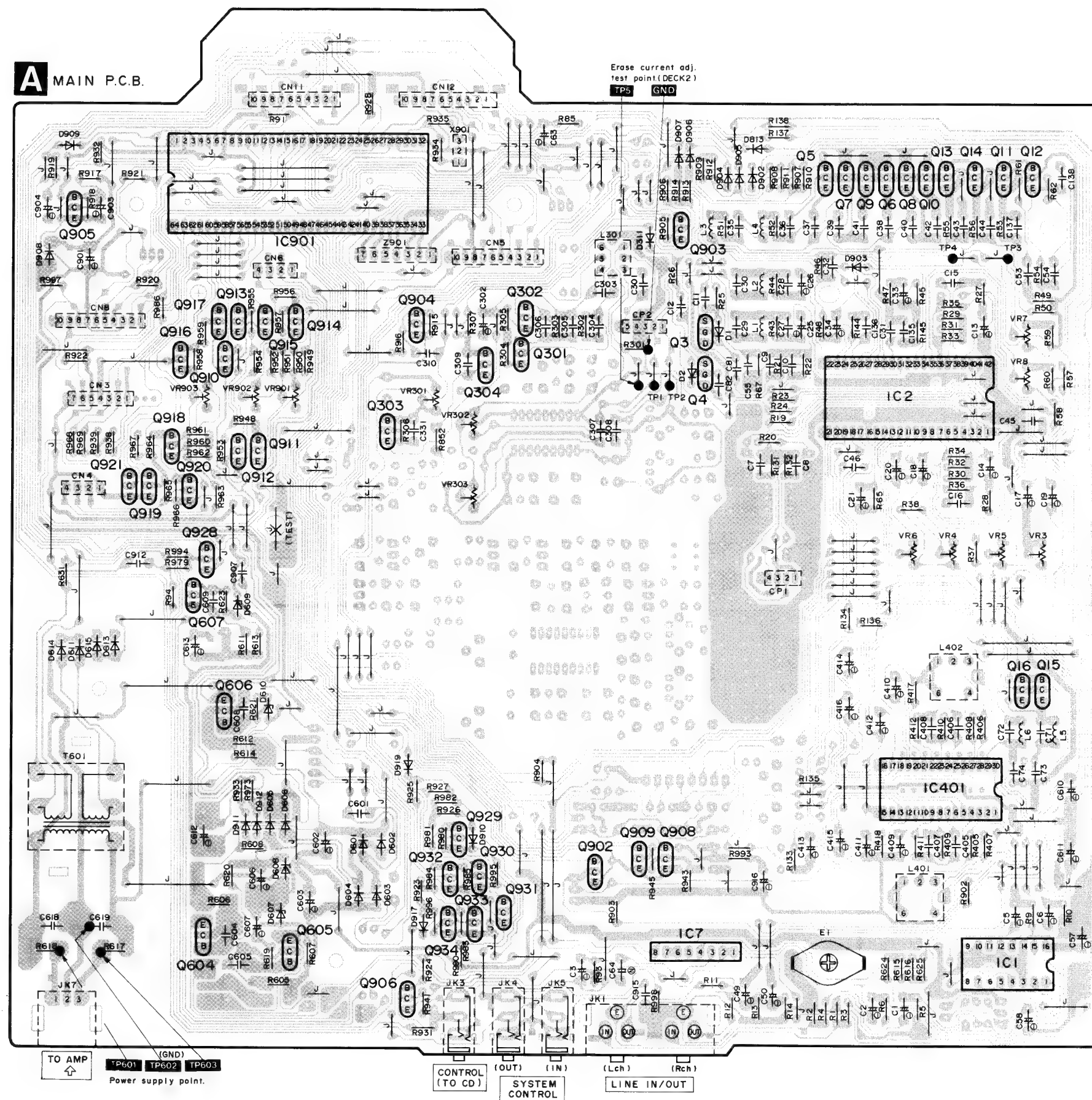
Fig. 11

BLOCK DIAGRAM

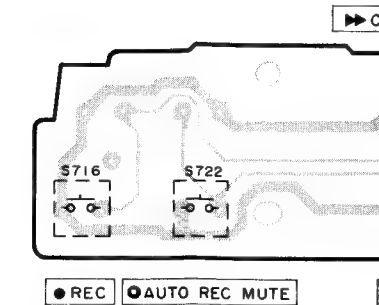


PRINTED CIRCUIT BOARDS

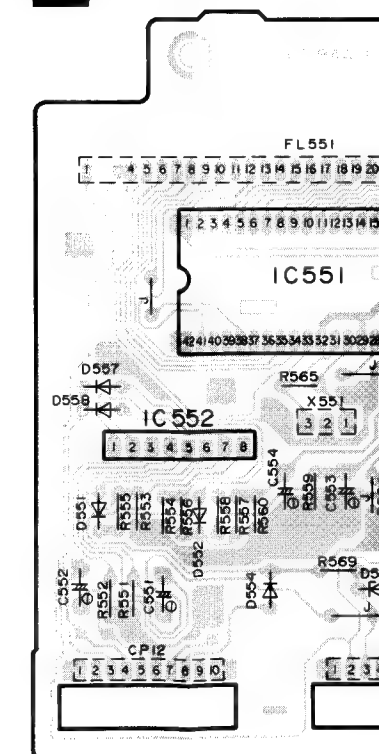
A MAIN P.C.B.



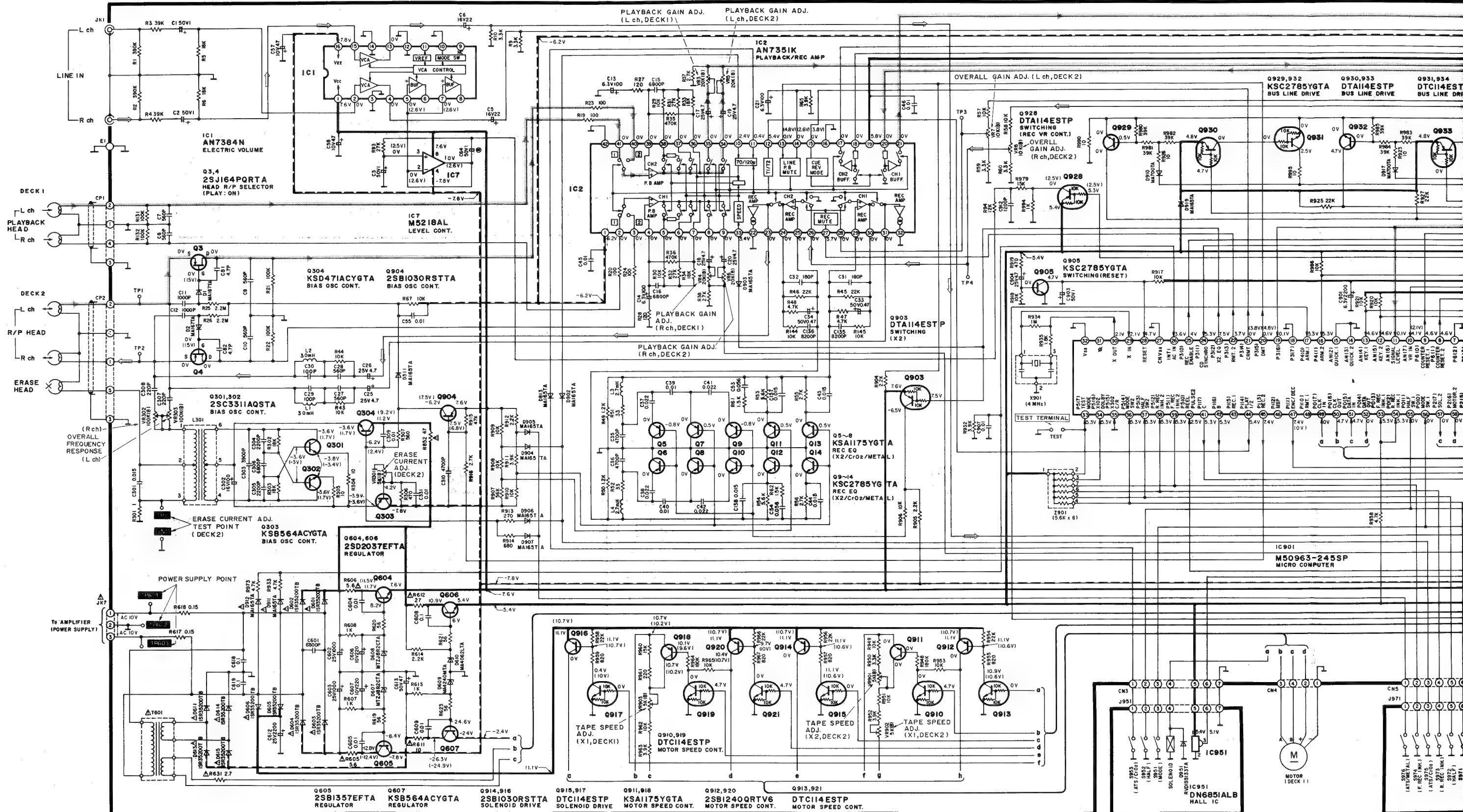
E OPERATION P.C.B.



D FL METER P.C.B.

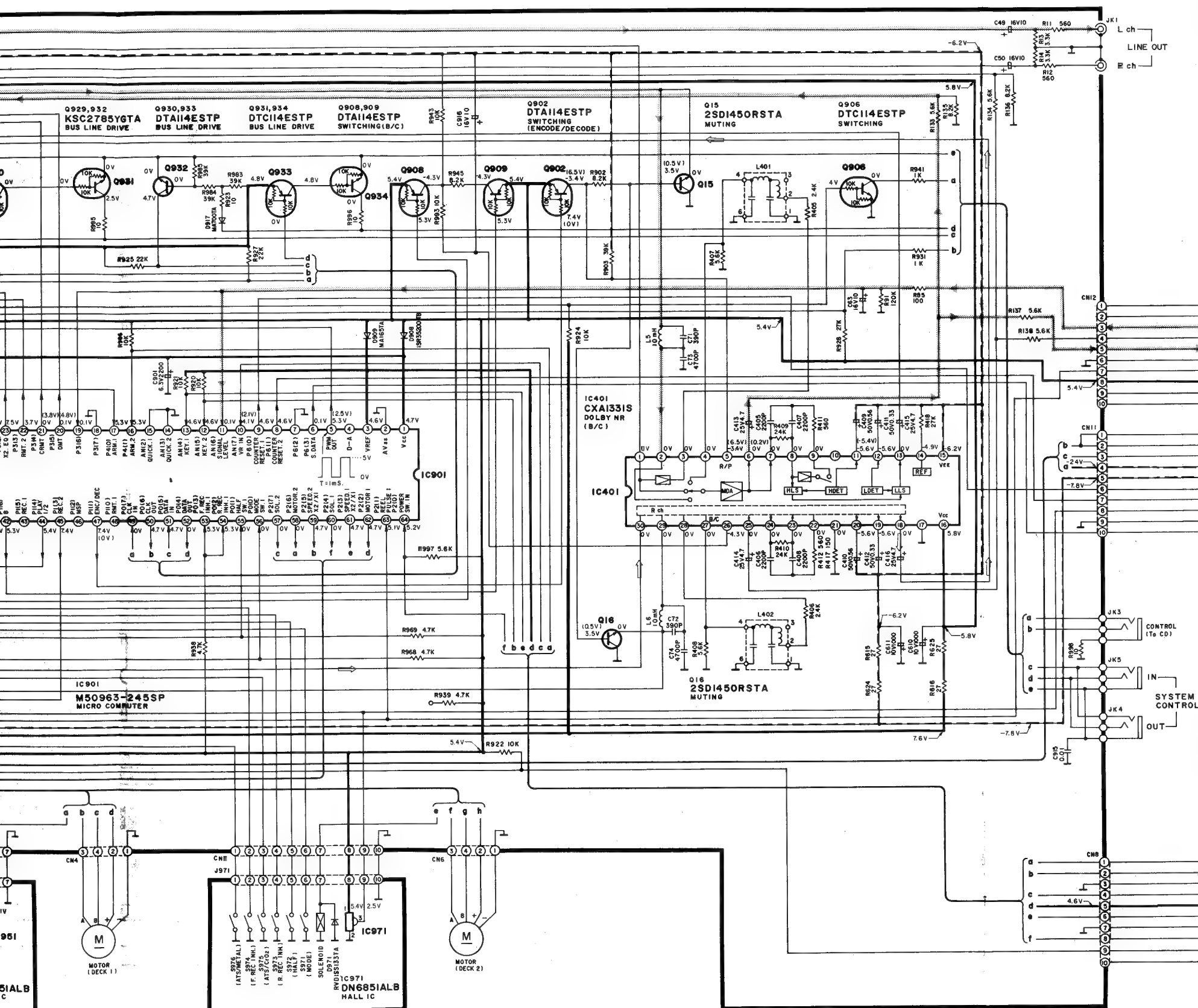


A MAIN CIRCUIT



B MECHANISM (DECK) CIRCUIT

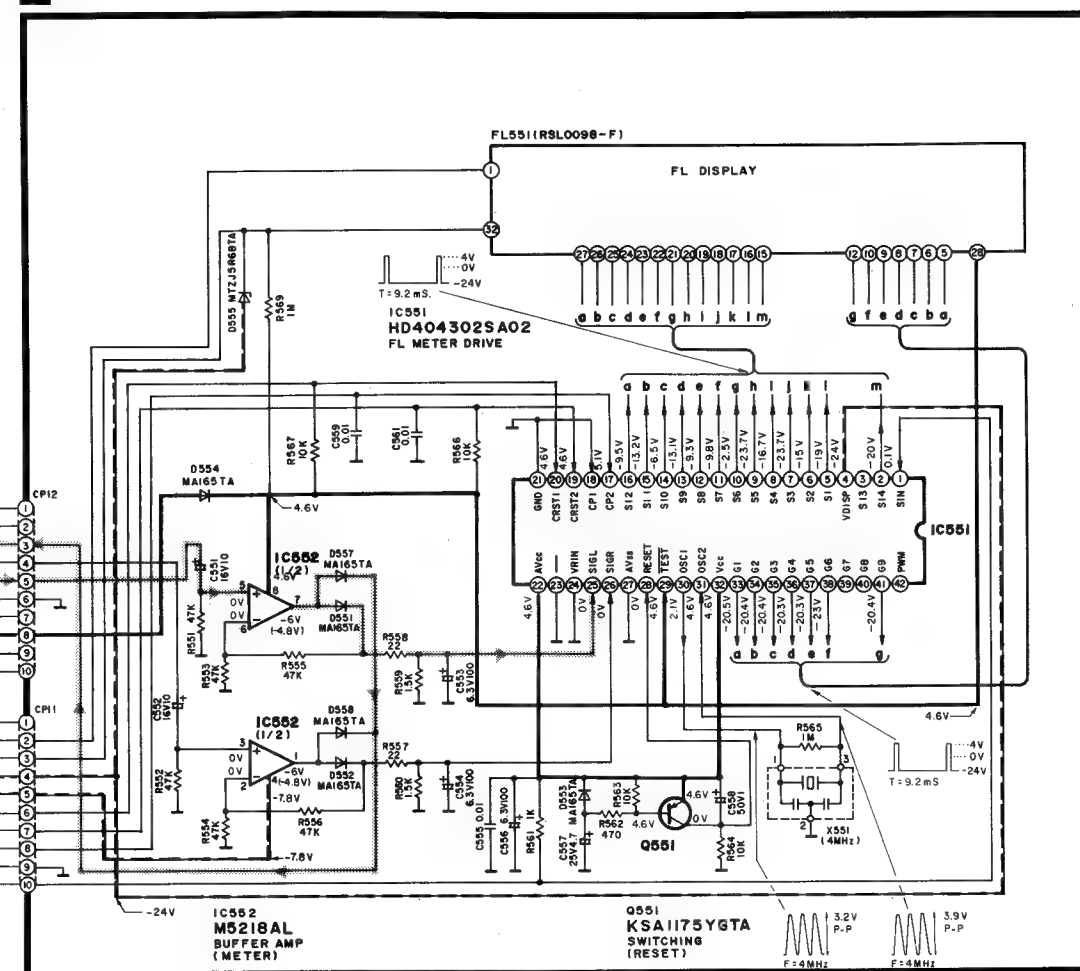
C MECHANISM



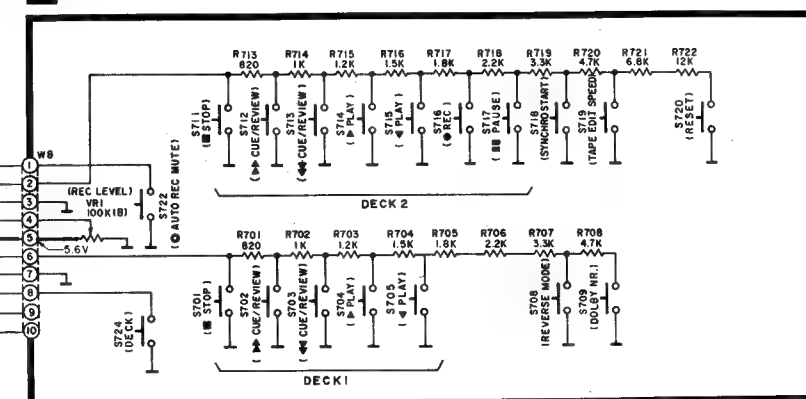
CK1)CIRCUIT

C MECHANISM (DECK2) CIRCUIT

D FL METER CIRCUIT



E OPERATION CIRCUIT



■ SCHEMATIC DIAGRAM (Parts list on pages 28~31.)

(This schematic diagram may be modified at any time with development of new technology.)

Notes:

- S701: DECK 1 Stop switch (■ STOP).
- S702: DECK 1 Fast-forward switch (▶▶).
- S703: DECK 1 Rewind switch (◀◀).
- S704: DECK 1 Forward-side playback switch (▷ PLAY).
- S705: DECK 1 Reverse-side playback switch (◁ PLAY).
- S708: Reverse mode switch (REVERSE MODE; ⇐, ⇐⇐, ⇐⇐⇐).
- S709: Dolby noise-reduction selector switch (Dolby NR; B, C).
- S711: DECK 2 Stop switch (■ STOP).
- S712: DECK 2 Fast-forward switch (▶▶).
- S713: DECK 2 Rewind switch (◀◀).
- S714: DECK 2 Forward-side playback switch (▷ PLAY).
- S715: DECK 2 Reverse-side playback switch (◁ PLAY).
- S716: DECK 2 Record switch (● REC).
- S717: DECK 2 Pause switch (■ PAUSE).
- S718: Synchro-start switch (SYNCHRO START).
- S719: Tape-to-tape recording tape-speed selector switch (TAPE EDIT SPEED).
- S720: DECK 2 Tape counter reset switch (RESET).
- S722: DECK 2 Automatic-record-muting switch (● AUTO REC MUTE).
- S724: DECK ON/OFF switch in "on" position (DECK).
- S951: DECK 1 Mode switch in "off" position.
- S952: DECK 1 Cassette half detection switch in "off" position.
- S953: DECK 1 ATS (CrO₂) switch in "off" position.
- S971: DECK 2 Mode switch in "off" position.
- S972: DECK 2 Cassette half detection switch in "off" position.
- S973: DECK 2 Rev. Rec Inhibit switch in "off" position.
- S974: DECK 2 For. Rec Inhibit switch in "off" position.
- S975: DECK 2 ATS (CrO₂) switch in "off" position.
- S976: DECK 2 ATS (Metal) switch in "off" position.

- Resistance are in ohms (Ω), 1/4 watt unless specified otherwise.
1K=1,000 (Ω), 1M=1,000k (Ω)
- Capacity are in micro-farads (μF) unless specified otherwise.
- All voltage values shown in circuitry are under no signal condition and playback mode of deck 2 with volume control at minimum position otherwise specified.
< >Voltage values at playback mode of deck 1.
()Voltage values at record mode.
For measurement us EVM.
- Important safety notice
Components identified by Δ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
- (———— < +B > ————) indicates +B (bias).
- (———— < -B > ————) indicates -B (bias).
- (————) indicates the flow of the playback signal.
- (————) indicates the flow of the record signal.
- The supply part number is described alone in the replacement parts list.

Ref. No.	Production Part No.	Supply Part No.
IC7, 552	M5218AL	M5218L

* Caution!

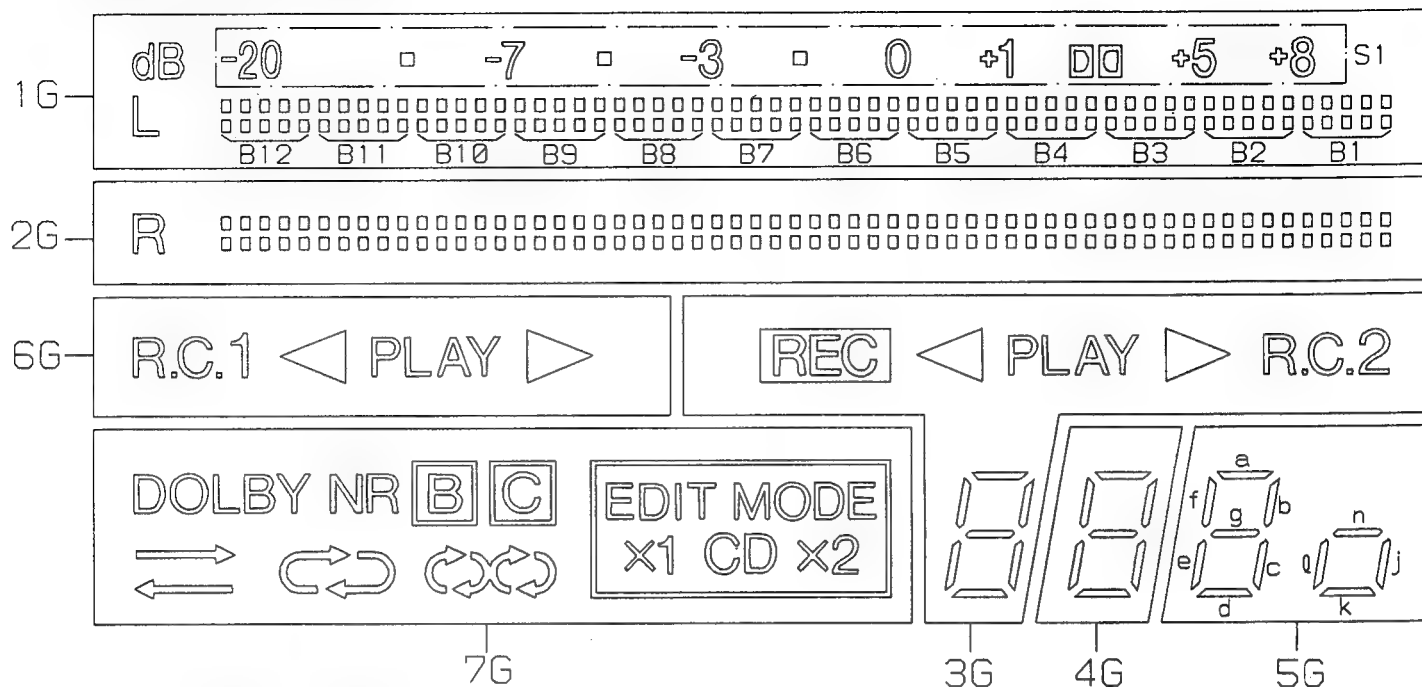
- IC and LSI are sensitive to static electricity.
- Secondary trouble can be prevented by taking care during repair.
- * Cover the parts boxes made of plastics with aluminum foil.
- * Ground the soldering iron.
- * Put a conductive mat on the work table.
- * Do not touch the legs of IC or LSI with the fingers directly.

■ TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES

AN7384N 	CXA1331S 	HD404302SA02 	AN7351K 	M50963-245SP 	M5218AL 	DN6851ALB
KSB564ACYGTA KSD471ACYGTA 		KSA1175YGTA KSC2785YGTA 2SC3311AQSTA DTA114ESTP DTC114ESTP	2SB1030RSTTA 2SD1450RSTA 	2SB1357EFTA 2SD2037EFTA 	2SJ164PQRTA 	2SB1240QRTV6
 Ca Cathode A Anode	MA165TA MA167TA MA700TA 1SR35200TB RVD1SS133TA	MTZJ5R6BTA MTZJ8R2CTA Ca Cathode A Anode	MA4062LTA Ca Cathode A Anode	MA4240MTA Ca Cathode A Anode		

INTERNAL CONNECTION OF FL

• Grid connection diagram



• Anode connection table

	7G	6G	5G	4G	3G	2G	1G
P1	↻	▶	n	-	▶	B1	B1
P2	↻	PLAY	j	-	PLAY	B2	B2
P3	↻	◀	l	-	◀	B3	B3
P4	EDIT MODE	R.C.1	k	-	R.C.2	B4	B4
P5	CD	-	-	-	REC	B5	B5
P6	x2	-	a	a	a	B6	B6
P7	x1	-	b	b	b	B7	B7
P8	-	-	f	f	f	B8	B8
P9	B	-	g	g	g	B9	B9
P10	C	-	c	c	c	B10	B10
P11	DOLBY NR	-	e	e	e	B11	B11
P12	-	-	d	d	d	B12	B12
P13	-	-	-	-	-	-	S1
P14	-	-	-	-	-	R	dB L

• Pin connection

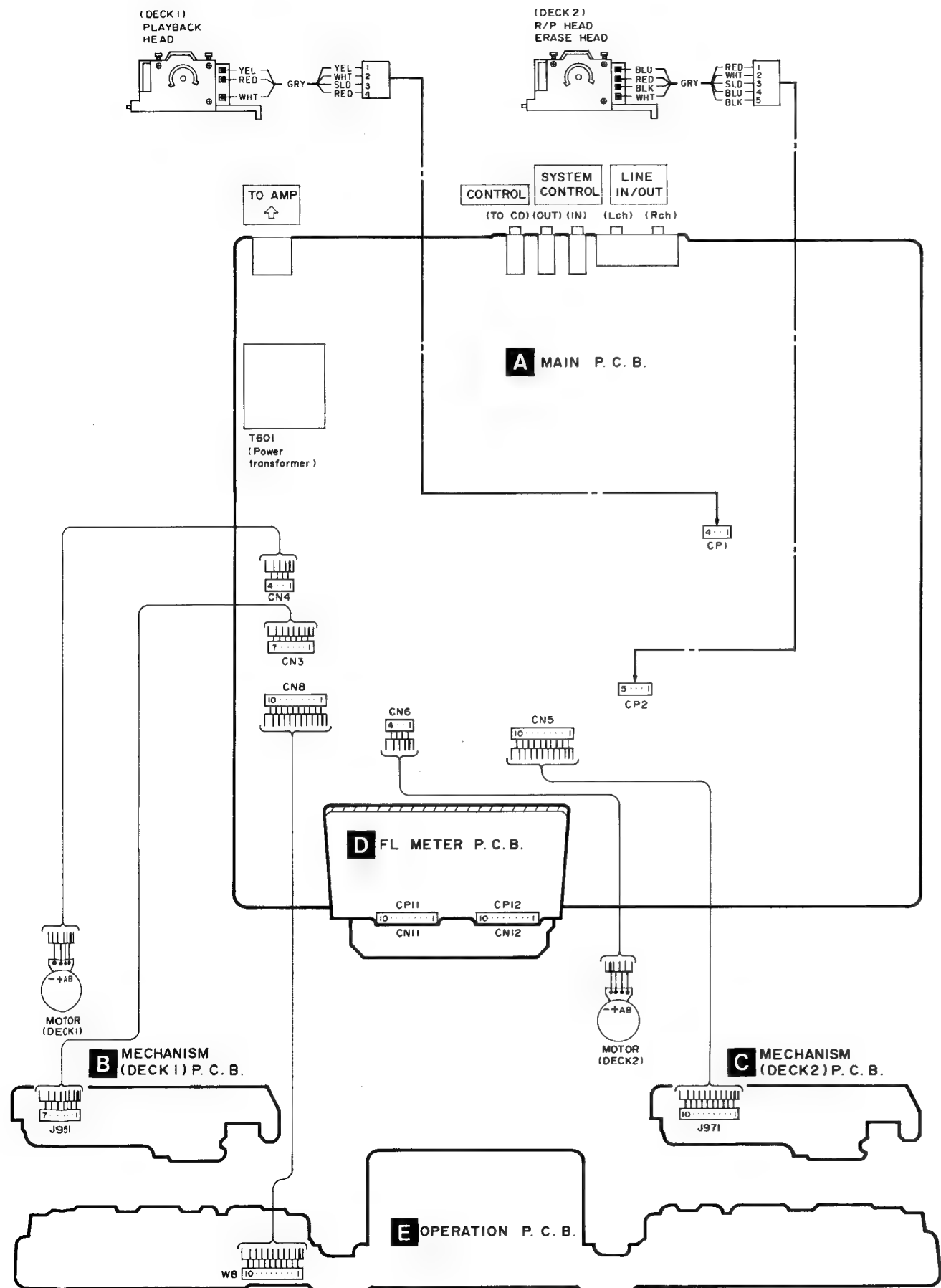
PIN NO.	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
CONNECTION	F 2	F 2	N P	N C	P 14	P 12	P 11	P 10	P 9	P 8	P 7	P 6	P 5	P 4	P 3	P 2	P 1	P 13	N C	N C	7 G	N C	6 G	5 G	4 G	3 G	2 G	1 G	N C	N P	F 1	F 1

Note

1) F1, F2.....Filament
2) NP.....No pin

3) NC.....No connection
4) 1G~7G.....Grid

■ WIRING CONNECTION DIAGRAM



■ TERMINAL FUNCTION OF IC'S

• IC901 (M50963-245SP): MICROCOMPUTER (This microcomputer is used for mechanical operation.)

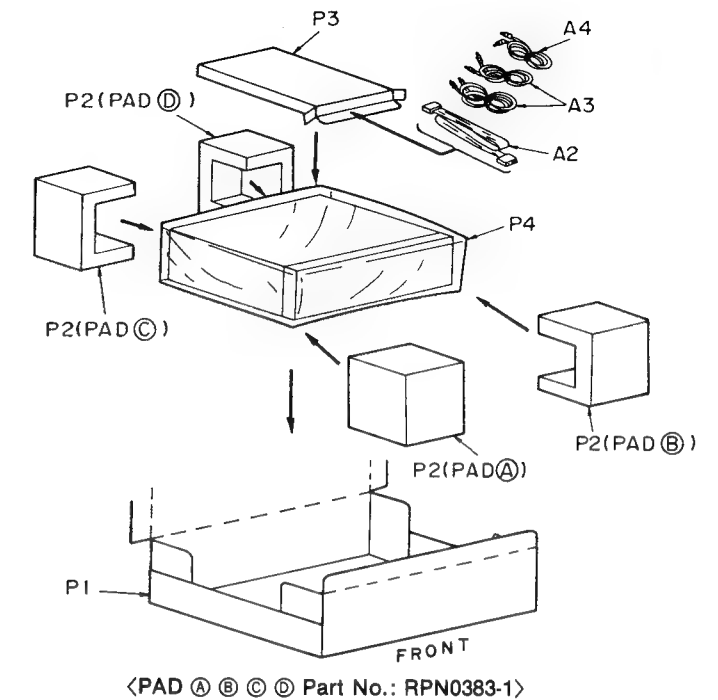
Pin No.	Mark	I/O Division	Function
1	V _{CC}	I	Power supply terminal
2	AV _{SS} (GND)	—	GND terminal
3	V _{REF}	I	Reference voltage terminal
4	D-A	—	Not used, open
5	PWM	O	Pulse width modulated signal
6	P6 (3)	O	Serial signal for FL display
7	P6 (2)	—	Not used, open
8	P6 (1)	O	Counter reset signal of deck 2 ("RESET": "L", others: "H")
9	P6 (0)	O	Counter reset signal of deck 1 ("RESET": "L", others: "H")
10	AN (7)	I	Variable voltage level signal of rec. level volume
11	AN (6)	I	Peak voltage terminal of rec. signal
12	AN (5)	I	Operation key switches Deck 2: STOP, F.F./REW, PLAY, REC, PAUSE, SYNCHRO START, X1/X2, counter reset
13	AN (4)	I	Operation key switches Deck 1: STOP, F.F./REW, F. PLAY, R. PLAY, Reverse-mode, Dolby B/C, Meter-range counter reset
14	AN (3)	—	Not used
15	AN (2)	—	Not used
16	P4 (1)	I	"AUTO REC MUTE" key switch signal of deck 2 ("ON": "L", "OFF": "H")
17	P4 (0)	I	Not used, open
18	P3 (7)	—	Not used
19	P3 (6)	—	Not used
20	P3 (5)	O	Mute signal of line out (Mute "ON": "H", Mute "OFF": "L")
21	P3 (4)	O	Mute signal with Cue/Review action (Mute "ON": "H", Mute "OFF": "L")
22	P3 (3)	O	Rec. mute signal of deck 2 (Mute "ON": "H", Mute "OFF": "L")

Pin No.	Mark	I/O Division	Function
23	P3 (2)	O	Playback equalizer select signal with tape edit of deck 1 (Normal: "H", X2 edit: "L")
24	P3 (1)	I	CD Synchro rec. signal (CD STOP: "H", CD PLAY: "L")
25	P3 (0)	O	CD Synchro rec. possible/impossible signal (possible: "L", impossible: "H")
26	INTI	I	"AC POWER OFF" det. terminal
27	CNV _{SS}	—	GND terminal
28	RESET	I	Reset signal ("L"=RESET, Normal: "H")
29	X _{IN}	I	Clock OSC terminal
30	X _{OUT}	O	
31	φ	—	Not used, open
32	V _{SS}	—	GND terminal
33	P5 (7)	I	Test terminal (Normal="H")
34	P5 (6)	I	Model select (Normal: "H")
35	P5 (5)	I	Model select (Normal: "L")
36	P5 (4)	I	Mechanism mode switch ("ON": "L", "OFF": "H")
37	P5 (3)	I	Cassette half det. switch ("ON": "L", "OFF": "H")
38	P5 (2)	I	Reverse rec. inh. switch of deck 2 ("ON": "L", "OFF": "H")
39	P5 (1)	I	Forward rec. inh. switch of deck 2 ("ON": "L", "OFF": "H")
40	P5 (0)	I	Reel rotation pulse signal of deck 2
41	P1 (7)	O	Dolby C "ON/OFF" select signal ("ON": "L", "OFF": "H")
42	P1 (6)	O	Dolby B "ON/OFF" select signal ("ON": "L", "OFF": "H")
43	P1 (5)	—	Not used, open
44	P1 (4)	O	Playback amp. select signal (Deck 2-P.B: "L", others: "H")
45	P1 (3)	O	Bias OSC "ON/OFF" select signal ("ON": "L", "OFF": "H")
46	P1 (2)	—	Not used, open

■ PACKING

Note:

This packing not illustrated Ref. No. A1 (A1-1, A1-2, A1-3).
Refer to the packing on page 38 of the service manual for Model No. SU-X302, Order No. AD9103050C8



■ REPLACEMENT PARTS LIST

Notes : * Important safety notice:

Components identified by Δ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

Pin No.	Mark	I/O Division	Function
47	P1 (1)	O	Dolby circuit encord/decord select signal (encord: "L", decord: "H")
48	P1 (0)	—	Not used, open
49	P0 (7)	I	Bus clock signal
50	P0 (6)	O	
51	P0 (5)	I	Bus data signal
52	P0 (4)	O	
53	P0 (3)	I	Forward rec. inh. switch of deck 1 ("ON": "L", "OFF": "H")
54	P0 (2)	I	Reverse rec. inh. switch of deck 1 ("ON": "L", "OFF": "H")
55	P0 (1)	I	Cassette-half det. switch of deck 1 ("ON": "L", "OFF": "H")
56	P0 (0)	I	Mechanism mode-switch of deck 1 ("ON": "L", "OFF": "H")
57	P2 (7)	O	Mechanism plunger "ON/OFF" select signal of deck 2 ("ON": "H", "OFF": "L")

Pin No.	Mark	I/O Division	Function
58	P2 (6)	O	Mechanism motor "ON/OFF" select signal of deck 2 ("ON": "H", "OFF": "L")
59	P2 (5)	O	Mechanism motor speed select signal of deck 2 ("X1": "H", "X2": "L")
60	P2 (4)	O	Mechanism plunger "ON/OFF" select signal of deck 1 ("ON": "H", "OFF": "L")
61	P2 (3)	O	Mechanism motor speed select signal of deck 1 ("X1": "H", "X2": "L")
62	P2 (2)	O	Mechanism motor "ON/OFF" select signal of deck 1 ("ON": "H", "OFF": "L")
63	P2 (1)	I	Mechanism reel rotation pulse signal of deck 1
64	P2 (0)	I	Power switch ("ON": "L", "OFF": "H")

• IC551 (HD404302SA02): MICROCOMPUTER (This microcomputer is used for FL meter operation.)

Pin No.	Mark	I/O Division	Function
1	SIN	I	Serial data signal
2 • 5 • 16	S1 • S12 • S14	O	Segment signal for FL display
3	S13	—	Not used, open
4	V disp	I	Pull down power supply terminal ($-V_{CC}$)
17	CP2	I	Peel pulse signal of deck 2
18	CP1		
19	CRST2	I	Tape counter reset terminal of deck 2
20	CRST1	I	Tape counter reset terminal of deck 1
21	GND	—	GND terminal
22	AVCC	I	Power supply terminal

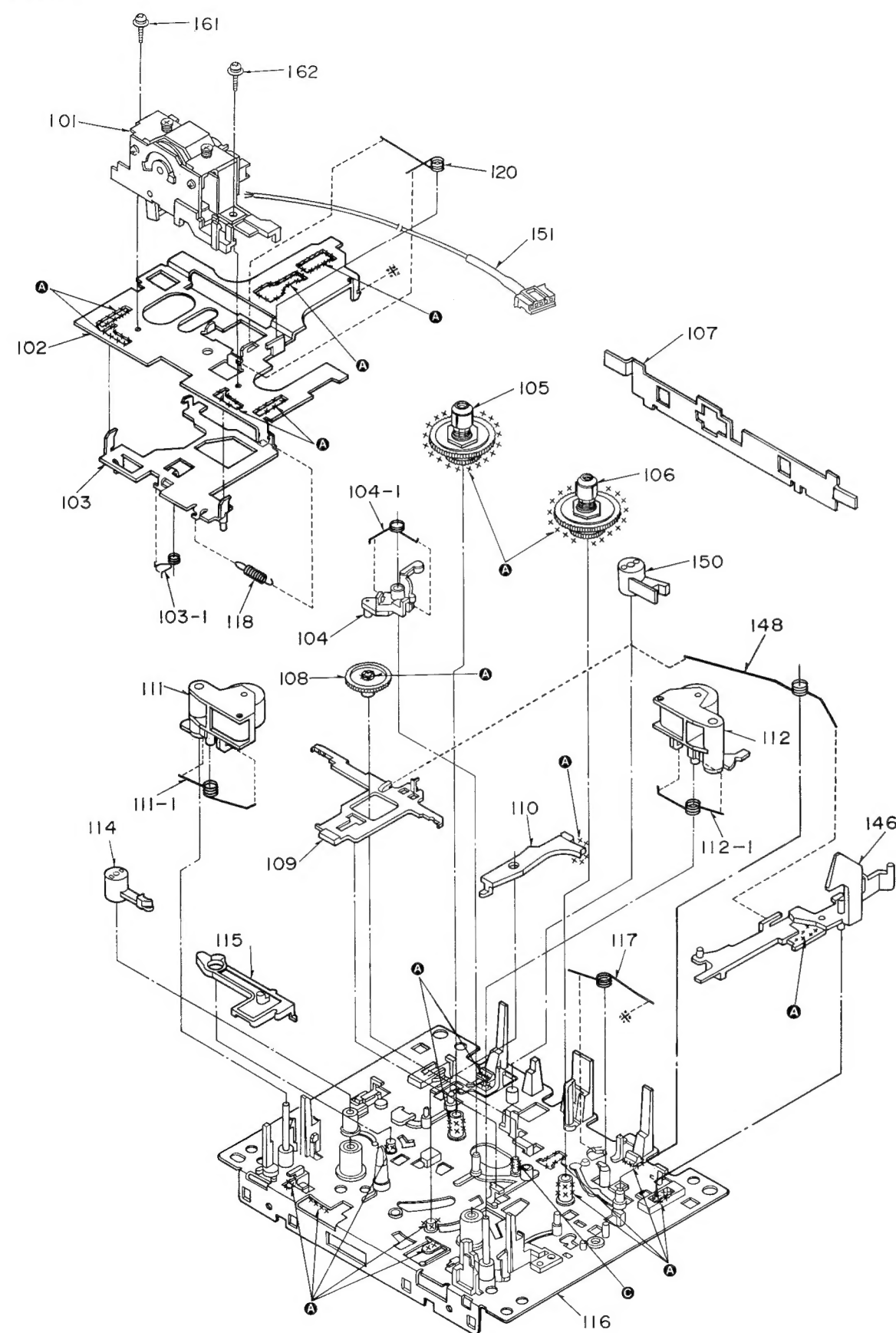
Pin No.	Mark	I/O Division	Function
23	—	—	—
24	VRIN	—	Rec level control signal
25	SIGL	I	Lch level signal
26	SIGR	I	Rch level signal
27	AVSS	—	GND terminal
28	RESET	I	Reset terminal ("RESET": "H")
29	TEST	I	Test terminal
30	OSC1	O	Clock OSC terminal (4MHz)
31	OSC2	I	
32	VCC	I	Power supply terminal
33 • 38 • 41	G1 • G6 • G9	O	Grid signal for FL display
39 • 41	G7 • G8	—	Not used, open
42	PWM	—	Not used, open

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
		INTEGRATED CIRCUIT(S)		Q904	2SB1030QTA	TRANSISTOR	
				Q905	KSC2785YGTA	TRANSISTOR	
				Q906	DTC114ESTP	TRANSISTOR	
IC1	AN7384N	ELECTRIC VOLUME		Q908, 909	DTA114ESTP	TRANSISTOR	
IC2	AN7351K	PLAYBACK/REC AMP		Q910	DTC114ESTP	TRANSISTOR	
IC7	M5218L	REC LEVEL CONTROL		Q911	KSA1175YGTA	TRANSISTOR	
IC401	CXA1331S	DOLBY B/C NR		Q912	2SB1240-P	TRANSISTOR	
IC551	HD404302SA02	MICROCOMPUTER; FL METER		Q913	DTC114ESTP	TRANSISTOR	
IC552	M5218L	BUFFER AMP		Q914	2SB1030QTA	TRANSISTOR	
IC901	M50963-245SP	MICROCOMPUTER; MECHANICAL		Q915	DTC114ESTP	TRANSISTOR	
IC951	DN6851ALB	HALL (DECK1)		Q916	2SB1030QTA	TRANSISTOR	
IC971	DN6851ALB	HALL (DECK2)		Q917	DTC114ESTP	TRANSISTOR	
		TRANSISTOR(S)		Q918	KSA1175YGTA	TRANSISTOR	
				Q919	DTC114ESTP	TRANSISTOR	
				Q920	2SB1240-P	TRANSISTOR	
Q3, 4	2SJ164PQRTA	TRANSISTOR		Q921	DTC114ESTP	TRANSISTOR	
Q5-8	KSA1175YGTA	TRANSISTOR		Q928	DTA114ESTP	TRANSISTOR	
Q9-14	KSC2785YGTA	TRANSISTOR		Q929	KSC2785YGTA	TRANSISTOR	
Q15, 16	2SD1450RSTA	TRANSISTOR		Q930	DTA114ESTP	TRANSISTOR	
Q301, 302	2SC3311A-Q	TRANSISTOR		Q931	DTC114ESTP	TRANSISTOR	
Q303	KSB564ACYGTA	TRANSISTOR		Q932	KSC2785YGTA	TRANSISTOR	
Q304	KSD471ACYGTA	TRANSISTOR		Q933	DTA114ESTP	TRANSISTOR	
Q551	KSA1175YGTA	TRANSISTOR		Q934	DTC114ESTP	TRANSISTOR	
Q604	2SD2037EFTA	TRANSISTOR					
Q605	2SB1357EFTA	TRANSISTOR				DIODE (S)	
Q606	2SD2037EFTA	TRANSISTOR					
Q607	KSB564ACYGTA	TRANSISTOR		D1, 2	MA167	DIODE	
Q902, 903	DTA114ESTP	TRANSISTOR		D311	MA165	DIODE	

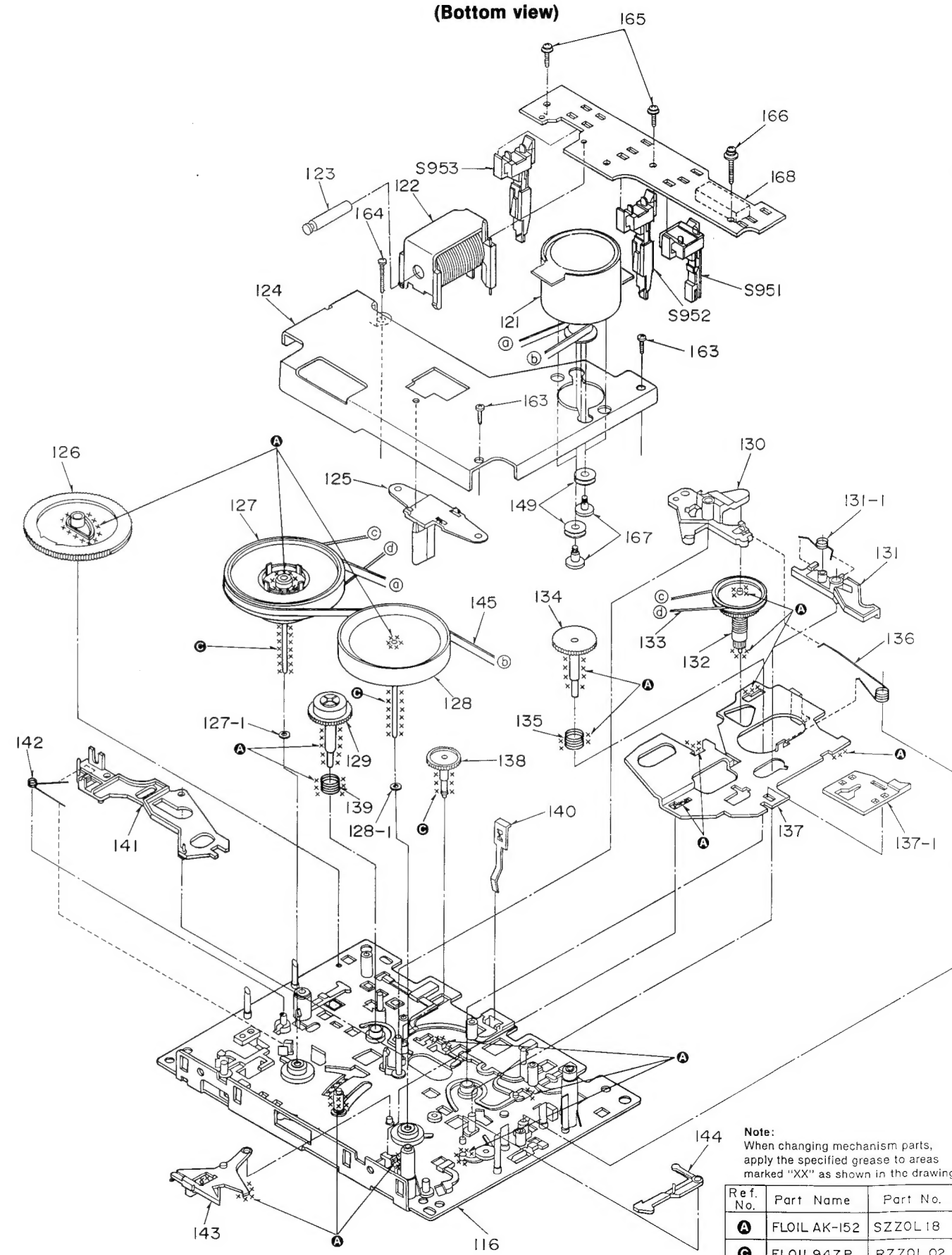
EXPLODED VIEWS

- Mechanical parts
- DECK 1

(Top view)



(Bottom view)



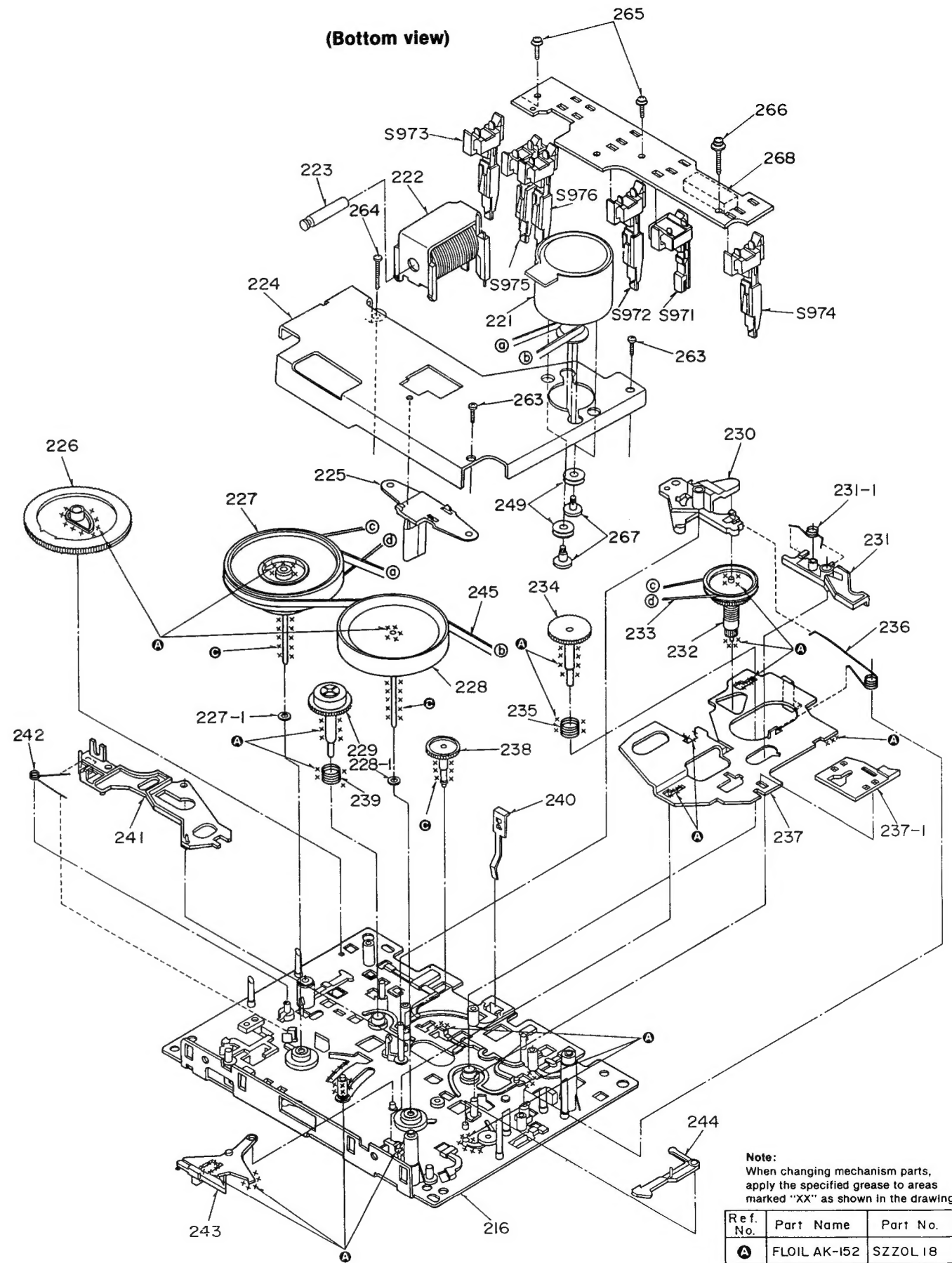
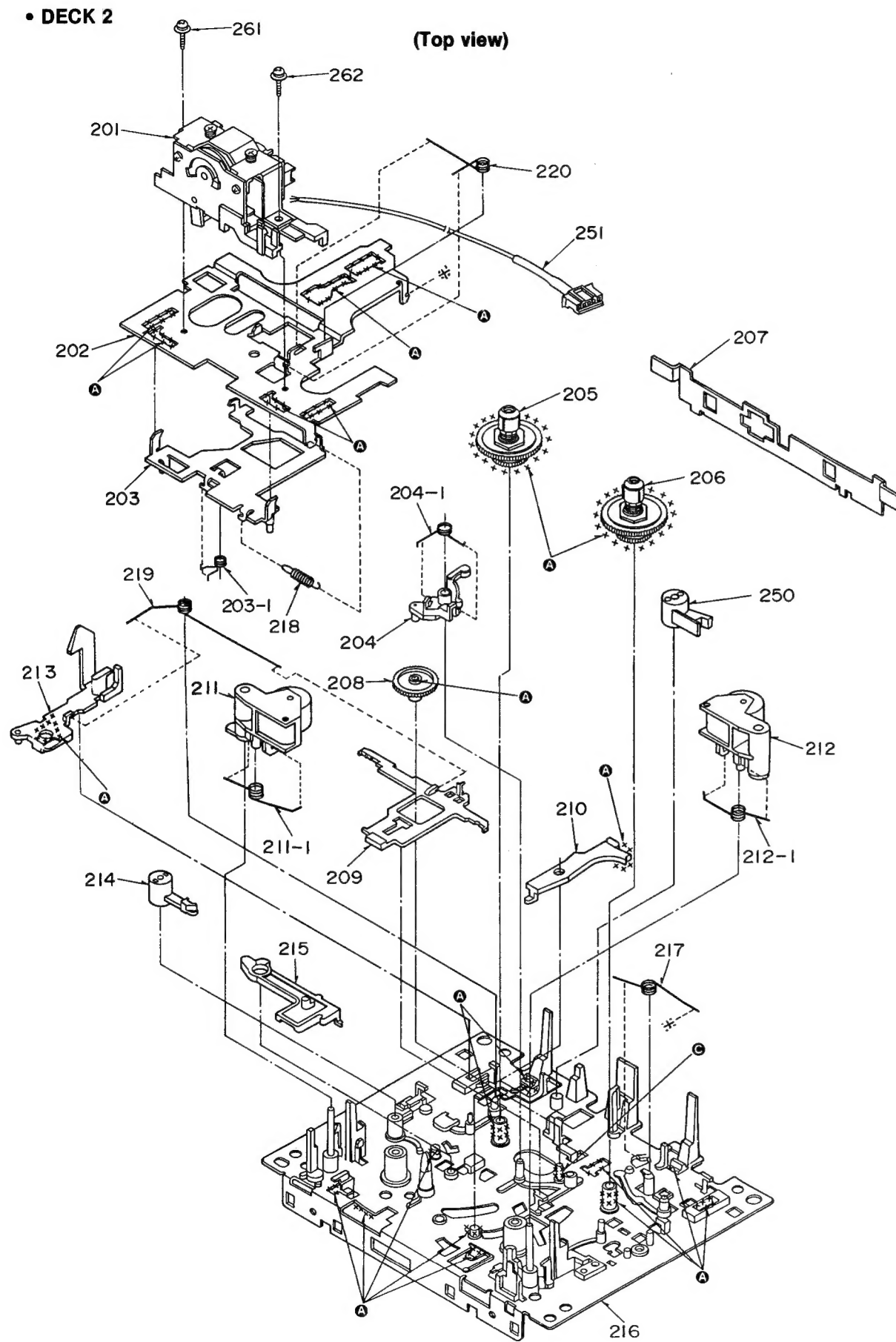
Note:
When changing mechanism parts,
apply the specified grease to areas
marked "XX" as shown in the drawing.

Ref. No.	Part Name	Part No.
A	FL0IL AK-152	SZZOL 18
C	FL0IL 947 P	RZZOL 02

• DECK 2

(Top view)

(Bottom view)



Note:
When changing mechanism parts,
apply the specified grease to areas
marked "XX" as shown in the drawing.

Ref. No.	Part Name	Part No.
A	FLOIL AK-I52	SZZOL I 8
C	FLOIL947P	RZZOL 02

REPLACEMENT PARTS LIST

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
		MECHANISM PARTS LIST		143	RUB515ZA	LEVER	
				144	RUB509ZA	LEVER	
				145	RDV108ZA	CAPSTAN BELT	
DECK1				146	RUB507ZD	EJECT ROD (R)	
101	FXQ0021	HEAD BLOCK (PLAYBACK)		148	RJW144ZA	SPRING	
102	RJA793ZF	HEAD BASE		149	RHG3032ZA	RUBBER CUSHION	
103	RZLAR300	ROD		150	RNL180ZB	DAMPRE ARM	
103-1	RJW143ZA	SPRING		151	REX0061	LEAD WIRE BLOCK (4P)	
104	1UB0089ZA	ARM		161	XTW2+6L	SCREW	
104-1	RJW148ZA	SPRING		162	XTW2+8L	SCREW	
105	1DM0018ZA	REEL TABLE (R)		163	XTN26+7J	SCREW	
106	1DM0017ZA	REEL TABLE (F)		164	RHE5203ZA	SCREW	
107	RML0069-1	LEVER		165	XTW2+8S	SCREW	
108	RDG5772ZC	GEAR		166	XYC2+JF16	SCREW	
109	RUB508ZB	BRAKE ROD		167	RHD26002	SCREW	
110	RUB506ZB	LEVER		168	RJS7T7ZA	CONNECTOR (7P), J951	
111	1UB0088ZA	ARM (R)					
111-1	RJW141ZA	SPRING					
112	1UB0087ZA	ARM (F)					
112-1	RJW140ZC	SPRING					
114	RNL1ZD	DAMPER ARM					
115	RUB503ZD	MAIN LEVER					
116	RZUSX980	CHASSIS					
117	RJW142ZA	SPRING					
118	RJD105ZA	SPRING					
120	RJW139ZA	SPRING					
121	RFM133ZA	DC MOTOR					
122	1UE0015ZA	PLUNGER					
123	RUB428ZE	MOVING IRON CORE					
124	RJL1030YA	ANGLE					
125	RMD5014ZC	ANGLE					
126	RDG5927ZG	GEAR					
127	1DW0037ZA	FLYWHEEL (F)					
127-1	RNW139ZA	WASHER					
128	1DW0038ZA	FLYWHEEL (R)					
128-1	RNW138ZA	WASHER					
129	1DG0006ZA	REEL TABLE GEAR					
130	RUB513ZD	ARM					
131	1UB0091ZA	LEVER					
131-1	RJW146ZA	SPRING					
132	1DR0011ZA	MAIN PULLEY					
133	RDV90ZB	BELT					
134	RDG5769ZA	REEL TABLE GEAR					
135	RJQ111ZB	SPRING					
136	RJW145ZA	SPRING					
137	1UB0090ZA	ROD					
137-1	RUB512ZB	F. F. ROD					
138	RDG5773ZB	GEAR					
139	RJQ112ZA	SPRING					
140	RUS609ZC	TAPE PRESSURE SPRING					
141	RUB514ZC	LEVER					
142	RJW147ZA	SPRING					

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
		MECHANISM PARTS LIST		241	RUB514ZC	LEVER	
				242	RUW147ZA	SPRING	
				243	RUB515ZA	LEVER	
DECK2				244	RUB509ZA	LEVER	
201	RXQ0019	HEAD BLOCK (REC./PLAYBACK)		245	RDV108ZA	CAPSTAN BELT	
202	RUA793ZF	HEAD BASE		249	RHG3032ZA	RUBBER CUSHION	
203	RZLAR300	ROD		250	RNL180ZB	DAMPER ARM	
203-1	RUW143ZA	SPRING		251	REX0059	LEAD WIRE BLOCK (5P)	
204	1UB0089ZA	ARM		261	XTW2+6L	SCREW	
204-1	RUW148ZA	SPRING		262	XTW2+8L	SCREW	
205	1DM0018ZA	REEL TABLE (R)		263	XTN26+7J	SCREW	
206	1DM0017ZA	REEL TABLE (F)		264	RHE5203ZA	SCREW	
207	RML0069-1	LEVER		265	XTW2+8S	SCREW	
208	RDG5772ZC	GEAR		266	XYC2+JF16	SCREW	
209	RUB508ZB	BRAKE ROD		267	RHD26002	SCREW	
210	RUB506ZB	LEVER		268	RJS10T7ZA	CONNECTOR (10P), J971	
211	1UB0088ZA	ARM (R)					
211-1	RUW141ZA	SPRING					
212	1UB0087ZA	ARM (F)					
212-1	RUW140ZC	SPRING					
213	RUB541ZB	EJECT ROD (L)					
214	RNL1ZD	DAMPER ARM					
215	RUB503ZD	MAIN LEVER					
216	RZUSX980	CHASSIS					
217	RUW142ZA	SPRING					
218	RUD105ZA	SPRING					
219	RUW167ZA	SPRING					
220	RUW139ZA	SPRING					
221	RFM133ZA	DC MOTOR					
222	1UE0015ZA	PLUNGER					
223	RUB428ZE	MOVING IRON CORE					
224	RUL1030YA	ANGLE					
225	RMD5014ZC	ANGLE					
226	RDG5927ZG	GEAR					
227	1DW0037ZA	FLYWHEEL (F)					
227-1	RNW139ZA	WASHER					
228	1DW0038ZA	FLYWHEEL (R)					
228-1	RNW138ZA	WASHER					
229	1DG0006ZA	REEL TABLE GEAR					
230	RUB513ZD	ARM					
231	1UB0091ZA	LEVER					
231-1	RUW146ZA	SPRING					
232	1DR0011ZA	MAIN PULLEY					
233	RDV90ZB	BELT					
234	RDG5769ZA	REEL TABLE GEAR					
235	RUQ111ZB	SPRING					
236	RUW145ZA	SPRING					
237	1UB0090ZA	ROD					
237-1	RUB512ZB	F. F. ROD					
238	RDG5773ZB	GEAR					
239	RUQ112ZA	SPRING					
240	RJS609ZC	TAPE PRESSURE SPRING					